PLOUGH, LOOM AND ANVIL;

OR

American Farmers' Magazine;

DEVOTED TO

Agriculture and Kindred Arts;

EMBRACING

I. Agriculture, in its Varied Departments; The Improvement and Cultivation of Soils; Field-Culture, Pasturage, and Wood-Lands; Gardening, Fruit-Growing, Shade-Trees, Buildings, and General Arrangements for Rural Economy and Comfort; Crop-Growing, Expenditure of Farm Products, Rearing of Animals, and whatever is of Special Interest to the Farmer.

II. Implements of Husbandry, Farm Engineering and Labor-Saving Machinery, New Inventions, Patents, and general Mechanical Improvements, interesting alike to the Farmer and the Mechanic.

III. Such views and statistics of American Industry, in its Progress and its Results, as are adapted to interest all.

All controversial matters not essentially connected with the foregoing subjects, to be carefully omitted.

To contain nothing offensive to refined taste; to be an unexceptionable Family Visitor.

☞ Price—$2 to single Subscribers; to Clubs of Four and upwards, $1.50 each.

APRIL, 1857.—VOL. 9.—No. 10.

NEW-YORK:

J. A. NASH and M. P. PARISH, Editors and Publishers.

OFFICE, NO. 7 BEEKMAN ST.

CONTENTS OF NO. X.—VOL. IX.

The Plough, the Loom, and the Anvil.

VOL. IX. APRIL, 1857. No. 10.

Agricultural.

HINTS FOR THE SEASON.

In no country in the world probably is the climate such as to require that so large a portion of the year's work should be done in the short space of four or five months as in ours. From All Fool's day to the end of July, four months, the seed is to be put in, and the crops, with few exceptions, are to be harvested. Each thing is to be done, not at the farmer's convenience, but at a given time, determined by the progress of the season; and considerable loss is sustained by varying much from the right time. This consideration, connected with the scarcity of labor and the difficulty of hiring extra help in emergencies, renders the farmer's position somewhat perplexing, and yet it enables him to settle some points with great clearness.

One is, that whatever can as well be done by the first of April, as the cutting and putting under cover a year's stock of wood, the winter pruning of fruit trees, the providing or repairing of implements, and generally whatever can be accomplished in-doors, should by no means be left till after that time. We read of a great general who degraded a soldier, who was found burnishing his shield in the eve of battle, saying, that before was the time to *burnish* his weapon, but then was the time to *use* it. We would not suggest that the farmer, who has not yet "done up" the thousand and one things that might as well have been done in February or March, should be degraded from the farm, but that he should do better next time—be ready for the campaign before another April comes. For this year we see not how he will escape the necessity of procuring tools, when he will need to be using them, and of splitting oven wood when he ought to be mowing down the grass. But if he is a wise man, this year's experience will make him wiser.

Another thing taught by the rapidity of our season is, that whatever can as well be delayed till August or September, should be deliberately dismissed till then, as, for the coming four months, the farmer has enough and more than enough to grapple with, of such a nature that it could not be much anticipated and may not be much delayed. We have always avoided anything like a definite prescrip-

tion for the work of each month, laying down what is to be done at its beginning, middle, and end, because we have not supposed it possible that any one could understand all this so well as the man himself, who controls or performs the labor on each farm. A thousand circumstances, all bearing upon the case, are known to him as they can be to no one else. Nevertheless some general principles may be suggested.

The repairing of fences will be among the first works of spring, perhaps the very first. If rails were to be drawn for the purpose, we suppose that to have been done before the snow went off. If so, the fences can soon be put in order. The drawing of manure to the fields, is another of the early works of spring. As much of it is heavy at this season, containing 70 or 80 per cent. of water, no considerate farmer will lug it in this state great distances. We do not give in to the idea that it is cheaper to purchase portable manures, than to apply those of the barn-yard. True economy requires that every particle of the home fertilizers should be carefully preserved and applied; but they may be used on lands adjacent to the barn; and if distant fields are to be cultivated, portable manures should be preferred. Suppose you have a field one mile from the barn. The question is not whether barn manure is worth carrying a mile—it certainly is—but whether it will not give you about as good a return on land near home? If it will, then it should be applied there, and some lighter fertilizer should be sought for the distant fields.

Besides repairing the fences and carting the manure, there are trees to be set, unless this was done last fall, or has been done in March. There is scarcely a farm in which the eye of taste will not detect a spot here and there where a flourishing tree would add to the beauty of the landscape and eventually to the profits of the owner. Of course we do not mean places where a valuable crop would be shaded, or where the wide-spreading roots of a tree would steal away the nutriment from growing plants. The cost of lining the way-side with forest trees is but trifling. They should be at some distance from the fence in order not to chill the adjacent soil by their shade, or impoverish it by their roots; and they should be at a good distance from each other, that they may not grow too tall. There is little of beauty in straight rows of tall trees, as we sometimes see in the Lombardy poplar. We marvel that our Railroad Companies are not awake to the growing of their ties on the sides of the road. On many soils a road six rods wide would grow all, or at least a large proportion of the ties to supply the road forever, and that on the very place where they will be required so as to save the entire cost of transportation, a cost in most cases beyond the value of the ties where grown. In

planting trees, large holes should be dug, not so very deep, say 10 or 12 inches, but broad—3 feet in diameter is not too much. Let the top soil be returned to the bottom of the hole. Set the trees no deeper in the ground than they before stood. Pour no water over the roots unless the ground be dry; and then but sparingly, and at some distance from the stem, so that it will reach the roots, not in floods, but after trickling slowly through the soil. In short, let it reach the roots in limited quantity, and greatly subdivided, precisely as happens in a rain storm, or in case of melting snow. Diminish the top of the tree about in proportion as the roots are diminished. Nature proportions the top to the roots. Her proportions are not to be violently broken. Fine earth only should come in contact with the roots; vacant spaces about the roots should be avoided; but do not stamp the ground hard, and by all means mulch with forest leaves, laying them thickly over a pretty large circle, and throwing over them, to prevent their blowing away, a little straw, old grass, bits of turf, stones, or almost anything at hand.

More trees are lost in our climate by want of mulching than by all other causes. Mulching produces a uniform moisture and warmth, or rather coolness of soil, just what trees, mutilated at best by transplantation, want. If you apply water, apply it after the mulching is put on, that it may come to the roots, more slowly and more finely subdivided, after the manner of rain-water. Some trees live if set in a pool of water and mud, but it only shows their tenacity of life. Many a man has saved a tree, as he supposed, by drenching its roots, when the truth was it lived in spite of him.

The planting of potatoes is another work for this month, not limited indeed to the month of April, for in warm situations, and especially for early varieties, it may be advisable to plant earlier, and we have known good crops to come from planting as late as the 25th of June, but our observation has led us to the conclusion, that although the blight is sometimes the severest upon the early planted, yet in a succession of years those planted in pretty good season oftenest escape. We incline to the opinion that in a long succession of years, planting the last of April or the first of May will give the largest crops, but that planting still earlier, say from the 16th to the 20th of April, will oftener give exemption from the potato disease. The very general idea that if the corn gets planted at the best time for that crop, it matters not when the potatoes are put in, we think is wrong. It has been common to hurry in the corn, and let the potatoes alone, till that is done, even if the ground is not ploughed till June. There are three objections to this view;—one, that in the long run, you do not obtain as heavy crops by late as by early planting; a second, that you oftener

suffer by the rot; and a third, that if the corn is planted *when* it should be, *as soon as the ground is warm but never before*, and *as* it should be, *slightly covered with some active manure to start it quickly*, there will be very little time for planting potatoes or any thing else, after planting the corn till it requires dressing. Our idea is that corn must not be planted in cold soil, to lie dormant three or four weeks, and then to come up yellow, and wait for circumstances in which it can grow, but that it should germinate and grow at once; and therefore we would have the potatoes planted, and that work out of the way before the ground becomes sufficiently warm to plant corn. If potatoes are a month in coming up, no matter; all that is requisite is, that there should be no frost after they appear above ground. But it is not so with corn;—it is a tropical plant—it demands heat; it can not accommodate itself to cold and wet—will not grow till the essential conditions of its nature are supplied; and if those are not supplied within a short time after its being planted, it becomes unhealthy, and receives a stint from which it seldom wholly recovers. We admit, that if planted in cold ground, the first of May, it will mature a little earlier than if planted in warm ground the 20th, but it will not mature as good a crop. We invite observation to this point, believing that all who will observe accurately will agree with us, that preëminently, there is with corn "a time to plant," that loss is sustained by varying much from *the time*, and since it is, beyond all controversy, our most important crop, equal in value to any three others, it should be attended to in the best possible time and manner, other farm work being made to accommodate itself to the demands of this crop. More on the growing of corn in our next. N.

AN EXPERIMENT OR TWO.

We recently fell in with a very sensible, and, we believe, a very successful farmer, who detailed to us the following experiment, with guano, superphosphate of lime, poudrette and wood ashes. These were applied to parts of a large field of broom-corn. To one acre was applied in the hill $4.50 worth of Peruvian guano; to another in the same way, $7 worth of superphosphate; to another, $4 worth of poudrette; and to another, $3 worth of unleached ashes, purchased at 25 cents a bushel.

These fertilizers were bought of a second or third-hand underdealer, just the way in which farmers ought not to buy them, as we begin to be satisfied that many of the failures in guano and superphosphate are owing to their passage through too many hands. It would be better for the farmers in a district to send one of their own

number up to head-quarters. But let that go. This good farmer intended to make his experiment *exact*, by weighing both the brush and the seed; but owing to the brainless skull of a laborer, his purpose was thwarted; and, as too often happens with farm experiments, he can only guess at the comparative results. He is, however, pretty good at guessing, or, in other words, is a man of sound judgment, and we therefore detail his opinion as of much value, notwithstanding the lack of exactness for want of weights and measures.

He thinks the guano paid for itself at least twice over, though broom-corn has been unusually low since the harvest; and we understand him that if he were to plant a similar field this year, and could know beforehand that the season would be similar, and the price the same as last year, he would give twice as much as he did last year for guano, rather than plant without manure. He gave last year at the rate of $60 a ton—the short ton, 2000 lbs., we believe. Let us not be understood to say that he would give twice $60 a ton in preference to buying other manure, but that he would give that rather than plant without any manure.

The superphosphate, he believes, just about paid for itself. The crop was a medium between that where the guano was put and that not manured. If he were to plant a similar piece with the same seed this year, he would hardly *turn a copper* for the choice whether to manure with superphosphate or not at all. It should be added, that he knows not whose manufacture the superphosphate was. More probably it was either Mapes', or DeBurg's, or Coe's; but as we are not acquainted with the dealer, we have no means of judging whether it came to him as it left the manufacturer. We do not mean to insinuate that all the dealers in fertilizers, between the manufacturer and the consumer, are rogues; but we do undertake to say that the temptation is too strong for some specimens of human nature; and we advise farmers to look out, in the first place not to get cheated, and in the second not to blame the manufacturer, unless they buy of *him*, or his accredited agent.

The poudrette did wonders—brought the crop forward early, and, what was hardly expected, held out till the maturity of the corn, without an after application, which we believe the manufacturer always recommends, claiming, if we have understood rightly, that the poudrette is a quickly acting, but freely admitting that it is not a lasting manure. It was the poudrette of the Liebig Company, at East Hartford, Henry Olmsted, Esq., Secretary; and in this case it must have something more than met the claims we recollect to have been made for it by that gentleman.

The ashes, 12 bushels to the acre, at a cost of $3.00, gave such an

increase of crop over the non-manured as would clearly establish for them a higher value than 25 cents a bushel, on that land and for that crop.

In addition to the above, this gentleman states that he has plain land, far out of the village where he resides, too far to carry heavy manures. Thirty years ago such land would have been estimated at $30 the acre. It has risen since. Four years ago he offered his at $50, and could not get it. Since then he has taken off profitable crops every year by the application of 400 lbs. of guano; and he is now offered $100 an acre for that land, and will not take it. This goes to confirm the opinion we have long held of the great value of guano for those outside, plain lands, too poor to produce much without a fertilizer, and too far off to be reached with heavy manures.

We are half disposed to boast of the consistency with which we have always urged that point; and yet some of our readers—those who have read us for several years in succession—may think that we have occasion to *own up* on another point pertaining to guano. When publishing the *Farmer* at Amherst, Mass., in 1855, we felt it incumbent on us to warn the inland farmer, with no great staple to turn off each fall, engaged in farming on an obdurate soil, and in a small way, against rushing into the purchase of any fertilizer at $60 a ton, till he knew pretty well what it was worth, and whether his dealer was selling him a pure article. We thought at least that he should use up his home sources of fertility first; and we so advised, saying that labor employed in husbanding the home fertilizers, high as it was, was cheaper than manure brought around Cape Horn, and then lugged several hundred miles inland, with too many chances for adulteration by the way. If this was wrong, our confession is made and done with. We did not think as highly of guano then as now. We had not seen so many proofs of its value. It is now proved that the farmer who grows some valuable staple, as wheat, broom corn, Indian corn, or vegetables for the city, can afford to pay a pretty high figure for the best Peruvian guano. It is true, also, that now the buyer who will use the precaution of going to head quarters, can nearly secure himself against fraud. If we therefore speak a little more favorable of guano now than then, we have pretty good reason for saying that the times have changed and not we. But we still think that its greatest value is for just such lands as those before alluded to, lands that are feasible but meagre, and beyond the reach of heavy manures; and we have not lost one whit of our preference for the home fertilizers, so far as with a little extra labor they can be preserved and husbanded. Don't purchase nitrogen from the Chincha Islands and at the same time let the nitrogen steam away from your pig-pen in the form of ammonia for the want of a load or two of muck or loam to *fix* it. N.

A WORD ABOUT POTATOES.

A CORRESPONDENT sends us the following on the back of a subscription list:—"I find a change of seed from the Hills to the Valley of the Connecticut River, will well pay the expense; and for manure, I put a large spoonful of ashes into the hill. After the potatoes are up, about the same quantity of plaster of Paris, and I do not fear the rot if I plant on warm land. If I use manure plough in the year before for corn, etc."

The hills of that region are more natural to the potato than the alluvial soil of the Connecticut valley. It matures more perfectly on the former, contains more starch, and is more mealy. *A priori*, therefore, we might infer that seed raised on the hills would prove advantageous. If experience teaches the same thing, the inference is strengthened, and may be set down as probably correct; and if this is true of the Connecticut Valley, we know not why it should not be of other regions, where the soils near the rivers are alluvial, and those on the hills are granite, mica-slate, or made up of the detritus of other rocks abounding in feldspar. At any rate, potatoes raised on such hills are better for food, and probably are for seed.

Our correspondent is certainly right in using ashes in the hill for potatoes; but if the ashes were thrown upon the ground so as to scatter over a square foot or more, it is better than to put them into a smaller compass. Ashes are good for potatoes, on the same principle that a granite soil is favorable. The potato is a potash plant. It contains a large amount of that alkali both in the tubers and the vines. The ashes furnish the potash in one case, and the feldspar of the granite in the other. In most land, perhaps on all that is not wet, the above application of potash will give a good return. With the ashes and plaster, applied as above described, we think the rot is not to be feared; and if the land, while warm, is not too dry, a crop of from 80 to 200 bushels to the acre, according to the strength of the soil and the cultivation, may be reasonably expected. If the writer means by the last clause that the land should be in a fair, or pretty good condition, without the application of green manure directly to this crop, we think he is right. The application of nitrogenous manures from the barnyard is apt to be followed by the potato disease.

We have often recommended for potatoes a compost of four bushels of unleached ashes to two bushels of shell lime, one bushel of plaster, and one of salt, or about in those proportions, to be applied at the rate of twelve to twenty bushels to the acre, in the hill, at planting; and from experiments of this kind that have been made to our know-

ledge, we have great confidence that such a compost will not only secure a fair crop, but on suitable land will prove nearly if not quite a sure preventive of the potato rot. It has been proved by analysis that potatoes grown by the aid of this compost contain less water and more solid matter, and that the solid matter is more nutricious than when grown on the same land with barn manures, or with no manure. We would not be understood to recommend so light a dressing as a means of obtaining a great crop; but on land of medium quality and in fair condition, it will give, in ordinary seasons, a good yield of the very best quality of potatoes which the land is capable of producing.

Since writing the above, an agricultural friend has stated to us that last year he grew three hundred bushels of potatoes on one acre. We do not state this as anything remarkable in itself; nor could we accept it in itself as an evidence of good husbandry; for we believe that three hundred bushels may be grown on an acre at too dear a rate. Our friend grew his as follows. The land was a sandy loam; had broom-corn on it the previous year; was manured for the broom-corn with stable manure; at the time for planting the potatoes, was in good, but not remarkably high condition. The ploughing was done by a man and span of horses in half a day. It was then furrowed with a single horse. Potatoes of medium size, or a little less, were selected for seed. One of these was put into a hill, with the exception that a few that had been selected, being above medium size, were cut into equal pieces, and made to answer for two hills. He manured with 160 lbs. of guano, in the hill, the seed potatoes and the guano being dropped in the bottom of the furrow. The earth was turned back with a plough, covering the seed some five or six inches deep. The field was then rolled down smooth. One man, one boy, and one horse, with a plough and roller, did the whole work of dropping the seed, distributing the guano, covering and rolling, in three fourths of a day. The cost of the guano was $4 50, or at most, $5, in the field. The potatoes were hoed twice, both times in good season, before the weeds had made much growth, making the labor light and expeditious, and the result was three hundred bushels of sound potatoes. We have entire confidence in the statement, because we have known the gentleman long, and know that he is not, like some farmers, and a great many who are not farmers, given to telling great stories. Our readers will judge whether there is anything in our friend's way of growing potatoes worthy of imitation. The rolling, after putting in the seed, if ever advisable, we should think would be adapted to light rather than heavy soil. We believe that with the compost described in the preceding paragraph, less potatoes

would be grown to the acre, but of a better quality, and less liable to be diseased. N.

A QUESTION AND ANSWER.

"CAN you give us any light upon coal ashes or charcoal dust? We can get any quantity of both these articles in our vicinity, and I am making some experiments with them, and would like the experience of others. A. H."

We can not speak from experience; but we have no doubt that charcoal dust is valuable—worth at least as much for agricultural purposes as the price of charcoal where our correspondent resides, and we should think more, if used in the best manner, and not in very large quantities. It should be mingled with the matters of the stall, the barn-yard, the sink, necessary, muck-heap, etc., etc., where it will act powerfully as a *retainer*, both before and after the application of these matters to the soil, at once promoting health and fertility. Its nature is to absorb large amounts of carbonic acid, ammonia and other gases, dangerous to animal life, but nutritious to vegetables. It seems to us quite possible that the application of large quantities of it to a meagre soil *might*, in some cases, do more hurt than good. But if used as we have indicated above, we have no doubt of its being valuable.

We have not thought highly of *coal ashes* as a fertilizer. They seem not to contain fertilizing properties enough to make them worth transporting more than short distances. The following, which we take from "Browne's American Muck Book," will throw some light on the subject. N.

"*Ashes of Anthracite Coal.*—The composition of the ash of anthracite will vary, of course, like that of coal itself. The following analyses by Professor John P. Norton of Yale College, were made from several pecks of ashes, obtained from a grate in which the coal had been burned the usual way, due precaution being observed not to intermingle the ash with any vegetable remains from the fuel employed in building the fires. The constituents of 100 parts of the ashes of white and red-ash coal yielded of

	White ash.	Red ash.
Matter insoluble in acids,	88.68	85.65
Soluble silicia,	0.09	1.24
Alumina,	3.36	4.24
Iron,	4.03	5.83
Lime,	2.11	0.16
Magnesia,	0.19	2.01
Soda,	0.22	0.16
Potash,	0.16	0.11
Phosphoric acid,	0.20	0.27
Sulphuric acid,	0.86	0.43
Chlorine,	0.00	0.01
	99.99	99.11

"These close and interesting analyses," says Professor Norton, "afford us much light upon the constitution of coal ash, and enable the chemist who has studied these subjects, to say at once and with confidence, that this ash is of some value as a manure, and should by all means be so applied in cases where it can be obtained cheaply.

"Of the white-ash, 3 74-100ths lbs. in 100, were soluble in water, and in the red-ash, 3 35-100ths lbs. Besides this, there was a further and larger portion soluble in acids, amounting in the white-ash to 7 58-100ths lbs. in 100, and in the red-ash to 8 lbs.

"In looking at the nature of these results, we may draw the general conclusion, that in the ash of anthracite coal, calling these fair specimens, we have in every 100 lbs. from 4 to 8 lbs. of valuable inorganic material, of a nature suitable for adding to any soil requiring manures."

Boussingault, on the same subject, remarks:

"Coal (fossil) is the product of vegetables, which, however, have undergone such a change as to have lost almost every trace of organization. Coal of different kinds contains from 1.4 to about 2.3 per cent. of ashes, and about 2 per cent. of azote. The ash of a variety of coal of very excellent quality gave of

Argillaceous matter (silicia) not soluble in acids,	62
Alumina,	5
Lime,	6
Magnesia,	8
Oxide of Manganese,	3
Oxide and sulphuret of iron,	16
	100

"Coal ash also contains very minute quantities of alkaline salts, which usually escape analysis when they are not especially inquired after. One specimen analyzed in my laboratory, gave nearly 00.1 of alkali. Coal-ash is particularly useful on clayey soils; it acts by lessening the tenacity of the soil; and further, doubtless by the introduction of certain useful principles, such as lime and alkaline salts."

BROOM-SEED—HISTORY OF, ETC.

Mr. Editor:—Some thirty years ago, my father used to raise a few pounds of broom-corn occasionally, and hire some one to make it into brooms for use in the family; but the seed was left in the barn, and it was said by the older members of the family that the hens liked it, and that it was very good to make them lay.

About twenty-four years ago, somebody in our neighborhood undertook to make brooms for sale. We furnished him land on which to raise his brush. We had one half the crop (brush and seed) for use of land and manure; and of course we had a large quantity of seed. It was good seed. But what to do with it, we did not know.

We fed it to the oxen, without grinding, in ploughing time, but the oxen could not plough. I became very much prejudiced against broom-seed; said it was good for nothing, etc., etc. But after I commenced farming for myself, I concluded to raise a little broom-corn. The seed was good, and I tried it for provender, mixed with corn—one bag of broom-seed with two bags of corn. I liked it much for working horses, horned cattle, and hogs, and I have continued to raise a little ever since on account of the seed. A few years since, I said to my neighbor, who kept two cows, and no other stock: "If you will fill two bags with corn and one bag with oats, and bring me an empty bag, I will fill the empty one with broom-seed, on this condition: You shall mix the bag of oats with one bag of corn, and mix the bag of broom-seed with the other bag of corn, and get them ground each sort separate. Feed to your two cows, and carefully examine the milk, and give me your opinion upon the relative value of oats and broom-seed to mix with corn for provender, with which to feed cows." He did so, and his reply was, that the broom-seed was decidedly the best. His opinion and mine were alike.

Near me lives a woman who keeps hens, and sells a great many eggs. She comes to me every year to buy some broom-seed for her hens; nothing else will take its place to make her hens lay, or at least she thinks so. I have been unwilling to sell it, but have sold her a little every year. She told me the other day, she should try to raise a small piece of broom-corn next season, entirely on account of the seed for her hens. FROM A PRACTICAL FARMER.

Will some practical farmer, who has much experience with broom-corn, give us his views of the best mode of growing it; on what land, with what manure and how much; what is the value of the seed, what are the best uses for it, etc., etc.? N.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

HOME-MADE MANURE.

MR. EDITOR:—There is no question in political economy more firmly established than the necessity of home production and home manufacture. If these are necessary for the wealth and independence of a nation, a collection of many families, why not equally necessary for individual families? Perfect independence of either nations or individuals, is an impossibility; but comparative independence should be the aim of all, and nothing in your journal has pleased me more than your advocacy of home-made manure in preference to the foreign article. There is no mistake in foreign guano, and there is no mistake in the home made-article. I have tried both, and with your permission will detail some of my experience, not vain-gloriously I hope,

but for the benefit of my fellow farmers. Eighteen years since, I bought my present farm, containing less than sixty acres, much in the same way as Barnum bought the Museum—with brass—as I had no capital. With the exception of a muck swamp, the farm has no peculiar facilities. Indeed, one of my neighbors condoled with me for having so poor land to spend my energies upon. The farm at the time of purchase would carry a span of horses and some four cows. Believing manure to be the back-bone of agriculture, we commenced on the muck, using refuse loam from a neighboring hill to add to its virtues and correct the acidity. The effect of this compost was good, but not equal to our expectations, as our loam has too much magnesia in it for agricultural purposes. Our next compost heaps were made of ten parts muck and one wood ashes. The latter containing all the inorganic food plants require, and the former the organic, our crops soon testifying to its virtues. Finding the farm could be made exceedingly productive by means of this compost without the aid of barn-yard manure, we have of late years kept little stock, and have sold our hay. The surplus of this crop, after feeding a span of horses and two or three cows, has in some years amounted to sixty tons. In addition to the composts of muck and ashes, we have made others of dead animals from the neighboring village and the refuse of manufacturing establishments, the sink, privy, etc. Now there are few farmers, (I might say none,) who have not on their own premises or in the vicinity, all that their farms require to be enriched and to enrich their possessors. Let these means be husbanded. All do not own a muck swamp, but turf from the road side, or the rich deposits in the forests, will answer in its place as the basis of the compost heap. BERKSHIRE.

WHEAT GROWING.

LEVI BARTLET, in the *Granite Farmer and Visitor*, has among other remarks, the following, which so far as they relate to the preservation and increase of the home manures, are valuable:

Under the present system of management, most of our farmers have not a sufficiency of manure for their hoed crops; therefore, would have none for their wheat crop. We believe most farmers could readily double or triple the value of their winter-made manures; (especially those that have not manure cellars). To do this, the hovel and stable floors should be water-tight; during the summer and autumn, there should be stored up an amount of swamp muck, or scrapings from the woods, at least equal in amount to the quantity of solid manure the stock would void during the winter. The drier the muck, etc., when stored, the better; and a quantity of plaster sufficient to give a daily sprinkling on the hovels, stables, etc. At least half a bushel of muck should be daily strewn over the hovel floors, to each

of the cattle tied up in the barn, and the same allowance to each horse. The muck should be covered with litter, such as refuse hay, oat straw, leaves, etc.; which, with the muck, would absorb all the urine, which well attested experiments prove is worth as much as the solid excrements. The hovels, stables, and sheep pens, should be daily cleared of their contents, and placed under cover, so as not to loose a large portion of their value by snow and rain water, as is too generally the case now. Where there are cellars under barns, the muck and plaster and litter should be used; in this way the whole is evenly *composted*, without the trouble of cartage, or forking over; the urine is all saved, and but little of the ammonia escapes. Let our farmers pursue the above, or a similar plan, and they would have manure for their hoed crops, and winter wheat. Some may say the course pointed out in this, smacks too much of hard work; well, there is some work in the thing, as we know by experience, but then it will pay better than to purchase guano, at sixty dollars per ton, or to buy western flour at thirteen dollars per barrel.

A farmer in this town, in 1853, raised 16 bushels of White Flint wheat on one third of an acre of light pine plain land. In 1851, the land yielded a fair crop of corn; sown with oats in 1852—light crop in consequence of drouth—a large growth of wormwood and barn-grass sprang up among the stubble; about the first of September, seven cart loads of compost manure were applied to the land, and deeply turned under with the stubble, weeds, etc. Thirteen quarts of seed wheat sown. In July 1853, the wheat was harvested, and when threshed, the yield was 16 bushels—or at the rate of 48 bushels per acre—which was sold readily at $3 00 per bushel for seed. We cannot conscientiously say to other farmers, "Go and do likewise," but if they will only do half as well, it will be better for them than to purchase flour at the present prices.

WARNER, N. H., Jan. 23, 1855.

SOMETHING ON GEOLOGY.

BY PROF. OLIVER MARCY, OF WILBRAHAM, MASS.

MANY scientific men believe that there was once a time when the earth in the vicinity of our meridian, as every where else, was like the surface of a cooling smelter's furnace. There was a crust around a central fiery mass, made porus by the evolution of gases through the semi-fluid cooling lava. It was blistered and corrugated and thrown into hills of considerable dimensions, for the moon in that early day as now, had power over the earth, and in her daily rounds dragged after her a tide which broke up the solid shell, and formed it into floating islands. The molten surge heaved island upon island, and dashed high up their rocky sides, and in dripping back, cooled in stalactical forms and in congealed cascades. Thus the fragments became thickened and cemented together, and the crust, roughened by hills and hollows, became more permanent. But water existing in a state of vapor, having been driven by heat from the central mass,

coming in contact with the cold of the outer spaces, was condensed, and fell in showers upon the still almost incandescent crust. Then was hissing and steaming and cracking and crumbling of the brittle, barren cinders into loose debris, while the water itself went off in whirling clouds of steam, carrying with it the heat of the central mass to the cold spaces, and condensing, performed the same evolutions again.

When the crust became so cooled that the water was permitted to remain upon its surface, it washed the loose fragments from their resting-places and strewed them in the bottoms of the valleys, and over the extensive submarine plains between distant mountain coasts. These beds of sediment, pressed by the weight of the super-incumbent ocean, prevented the heat from radiating from the sub-jacent crust, and thus, by the inner fires, the crust was re-melted and the sediment re-crystalized and formed into solid rock.

When these, in their turn, were elevated by the forces now deep pent-up within the earth, higher hills, larger mountains, more lofty cliffs, and steeper precipices were formed. Then were formed Washington, and Jefferson, and Ascutney, and Monadnock, and Hoosack, and the range beyond Westfield, and the hills that run through Palmer and Monson, on, to meet the Sound. These are the primary stratified rocks, the gneiss and the mica slates.

When these hills were elevated, the valley of the Connecticut river was formed. This was an immense trough, especially that part between the ocean and the north line of Massachusetts. The bottom was at least 14,000 feet* below the present soil, and the hills on either side, lifted their crags two or three hundred feet above their present summits. And all over Vermont and New-Hampshire, instead of the round-topped hills that now exist, there were towering pinnacles, jagged cliffs, and shelving precipices.

These cliffs were worn and decomposed by the rain, battered by hail, split into fragments by the frosts and the lightnings, and the fragments were washed down into the valley bottom, by the streams. The great trough gradually filled up, while the hills were rounded, smoothed and lowered. Long Island had not yet appeared, and the tidal wave rolling in unbroken from the open sea, laved the base of our hills from New-Haven to Northfield, and strewed the sediment over its shallowing bottom.

How long this day continued we do not know, but this we know, that it continued long enough for things of life to appear, both in the

* See History of Western Massachusetts, Vol. 1, Pp. 386–7; written by Dr. Edward Hitchcock, Jr., Williston Sem. At Gill Falls it was 10,000 ft. deep.—President Hitchcock.

sea and on the land. Enormous birds were there, whose weight was a thousand pounds; whose feet were half a yard long, and whose stride was equal to two paces of a man. They congregated together like cranes upon the shore, waded the shallow waters, and left the prints of their feet in the mud, which, turning to stone, has so perfectly preserved them, that we can see the pappillæ upon the skin of their toes.

Dr. Hitchcock has described the tracks of at least fifty species, varying in length, from one-half an inch to twenty inches. The greater part of them were made by bipeds, most of them, probably, by birds. But at least a dozen were made by quadrupeds, most of which had hind feet much larger than the fore feet, like the kangaroo, king of these animals, and walking among them upon two feet, was a monster with structure like a frog, but huge as an elephant.

Ages passed on, and these animals lived undisturbed, basking themselves in the sun that shone upon no human being; cropping the herbage of the shore, or seizing the fish of the estuary; but though no one was there to rule them, no one to name, describe and classify them, they left a record of themselves in their tracks which has been better preserved than will be the books of Audubon or Cuvier.

There was another epoch—when the gravel and sand and mud which had filled the deep cavity, and between the layers of which, these animals had left their tracks, and some of them their bones, had become changed to rock; then, again the pent-up fires burst the shell about them—new rock and all, for seventy miles all along the valley, and through the crevices oozed the red semi-fluid lava, cooling as it arose, till it produced Norwattuck, and Holyoke, and Tom, and their train of lesser notables, extending on to West Rock, New-Haven. None but brute animals were there to witness the eruption, and possibly they did not survive the catastrophe, for the force that rent the solid earth for seventy miles, produced a destructive quaking far and near. All over the valley, the new rocks which were before in a horizontal position, were thrown into hills and hollows. In some places at least, the valley sunk, leaving the fragments of the younger rock which jutted against the older hills, high up on their sides, in the place where they were deposited. This deposited rock is called sandstone, and underlies all your farms in the valley, from the range on the east to the older range on the west.

There was another day. Not a day of fire, as heretofore, but a day of floods, of cold, of ice, of death. From the north pole to South Carolina, there extended one enormous mass of ice. It was five thousand feet thick, filling every valley, and riding above every mountain top. Mount Washington alone lifted his naked head above the frozen sur-

face—a lonely isle in the great ice ocean. And there rested that mask of ice, like a chill death-moth, over all these fair lands. Life was extinct; no tree or shrub, no fish or fowl, could bloom, or swim, or fly —all were dead.

This sea of ice, sensitive to the varying heat of the sun, expanded and contracted, and with its motion and enormous weight, pulverized the subjacent stone and rocks, broke off cliffs and ground down the hills. And when the ice-king lost his hold and the southern portion melted away, icebergs broke loose from their mountain moorings, and floating away southward, bore with them rocks and stones, and dropped them along the valleys, and on the hill tops. And the moving waters swept on the fine sand, the gravel, and the rounded pebbles, and formed an immense bed of loose material all over this valley.

The sand and gravel at the bottom of the moving waters, was thrown into banks, and bars, and hollows, like the snow driven by the wind, and the retiring waters left lakes and ponds, pent up in their cavities. Some soon broke through their sandy barriers, some only after ages had passed away, and some still remain. This great bed of loose material, modified by the retiring waters and the flowing streams, has been called by those who classify your soil, diluvium.

Now commenced the more immediate preparation of the valley, for the residence of man, the formation of the alluvium. Under the influence of a genial sun, the peat moss started in the muddy lake—fish were created in the now transparent waters, lichens grew upon the rocks, and *these* dying, mingled their decomposing fragments with the sand, forming a soil for larger plants which, in their turn, came into existence. Then were created animals feeding upon these plants, then those which preyed upon each other, and all, plants and animals, when they had fulfilled the first object of their creation, dropping their organic remains upon the bosom of mother Earth, mingled their elements with the soil and prepared it for more luxuriant growths. The maple, the chestnut, and the oak came to cover the hills, and the pines stood thick over the plains. Then man appeared and built his hut and made the plant, the fish, the beast, all contribute to his happiness. But, it is not only said in Holy Writ, "In the sweat of thy face shalt thou eat bread," but the soils teach us that the labor of the head and the labor of the hand must be expended upon them before they will contribute very much to the production of human happiness. God has given us heads and hands, and placed before us rock, and sand, and clay, and mud, and marl, and peat, and says unto us, "work."

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

THE BIG APPLE TREE.

When I was a child, there stood in our garden a tree, neither admired for its beauty nor loved for its luscious fruit. It was known simply as "the big apple tree," and was shunned by me, at certain seasons, because of the living, moving crop of worms, with which it swarmed. The tree stood there, simply because it was there, though its fruit was not considered worth gathering; sometimes when the apples were "thick" upon the ground, my father would go and shovel them over to the pigs, just to get them out of the way.

It rose from a row of currant bushes that separated the fruit from the vegetable garden; but how it came there, I do not know; probably it was a foundling, for we had a large apple orchard on the other side of the house. Occasionally a motion was made to cut it down; the heads of the family and the older children would discuss the matter, but whatever decision they came to, "the big apple tree" still remained in its place.

I said it was not admired for its beauty; but this is not exactly true, for during the month of May, it was the queen of the garden. Who ever looked upon such apple blossoms! Very beautiful were the rich red buds, which gradually opening, revealed softer tints, fading to a delicate blush, and then hung out in great snowy clusters. Odors from Araby the blest, could not excel the perfumed breath from those flowers. Even travelers along the road would stop to catch the flitting sweetness. But none ever asked or cared if the glowing buds were pregnant with coming fruit. Like many a flashing belle, when beauty faded, "the big apple tree" sunk into insignificance.

Early one spring my oldest brother visited an uncle, who was a nursery-man in a neighboring county, and returned with a quantity of choice grafts. Now, he asserted, he would try and make something of the old tree; he should do no harm, if he did no good. My father and mother thought it was well enough, if he had a mind to waste his time, but they should never live to see any good of it.

Accordingly, with saw and knife, he mounted among the leafless boughs, and carefully pruned the whole tree. The ends of about one third of the branches were then sawed off; incisions were made, the grafts were inserted, and coatings of wax were spread over the wounds. When the buds began to burst and young twigs to come forth, many of those on the branches bearing grafts were pinched off, that the scions might not be robbed of due nourishment.

A new interest now centered in the tree; the tangled bushes were

removed from under it, and no worms' nests were allowed to be cradled in its boughs. It presented something of a hostile appearance, with its bristling spears rising from the truncated arms, though the spears gradually spread out into broad, leafy pennons.

The next year, and the next, the same process was repeated, until the old stock was entirely crowned with a new growth. The first set of grafts now began to throw out blushing buds to the inviting airs of spring, and carefully were the petals turned back, and curious eyes looked in to see if incipient fruit was there.

My father and mother lived to acknowledge that "the big apple tree" was the most profitable one on the farm. It dropped from its arms golden harvest pippins, while at the same time there nestled among the green leaves the scarlet seek-no further and the rich yellow russet. From the Harvest feast to the Christmas merrymakings, our table was graced with its luscious fruits.

There are neglected wastes on almost every farm, which, with a little care and a little labor, can be made rich with beauty or luxury, which lends peculiar charms to the farm-house. JUNE ISLE.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

WHEAT—RENOVATING PASTURES.

MESSRS. EDITORS:—I give you a brief article, induced by the reading of D. L. Harvey's, of Epping, N. H., on wheat culture. His suggestions and practice are good for *spring* sowing, which I have practiced with fair results for many years where I wished to stock down fields after a corn or potato crop, sowing one or two hundred of plaster per acre on the wheat when fully up, and rolling in clover-seed, which follows admirably. In all other cases I prefer winter wheat. Sometimes by flat culture I cover the wheat in the last hoeing of corn, or field beans. My plan is to renew my mowing fields, where the soil is suitable, by ploughing immediately after haying, and rolling, to make a smooth surface. After a few weeks, I give it a top dressing of finely prepared manure, very thoroughly buried by harrow and cultivator, early in September. The wheat thus sown on the inverted sod, has given me 20 to 25 bushels per acre—a heavier and better crop for flour, than spring wheat. I omit sowing the clover till spring, (if there is danger of its being thrown out by frost.) Early as possible I harrow it in, and roll, to replace any disturbed roots of wheat, and sow ashes and plaster. I have never failed to get a satisfactory crop of wheat and grass, which I mow with the stubble, (left high,) and being early, all is tender and sweet. Thus my grass is renewed without loss of a crop, and my wheat is an extra. I generally

sow a piece of rye and wheat in the same way, and get more bushels and better, than from rye alone. Of wheat alone, I sow five pecks—mixed, one bushel of rye with a half bushel of wheat to the acre. I soak and lime the seed invariably.

Besides the general interest I have taken in reading and circulating your "magazine," with your *joint* labors to improve its character, a particular interest has been awakened in my bosom, for the double purpose of encouraging your worthy efforts in behalf of "farmers," and also to have some young men, freeholders, share the benefits of its speakings, with its present large circle of friends. I have been induced to lend some copies, though I wish to keep a file. B. W.

LANCASTER, MASS., Feb. 20, 1857.

That is right; lend them, and look to us for a re-supply of missing or defaced numbers. Will others of our subscribers do the same? We desire that the work may be seen, as we believe it will commend itself more and more, as our increasing subscriptions show it has already done; and we will cheerfully re-supply numbers that may be lost or injured by loaning.

Our subscriber's way of renovating his pastures, and getting at the same time a crop of wheat or rye, or a mixture of the two, we believe is excellent for the region where he lives, and we know not why it should not be for large extents of our country. N.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

ENTOMOLOGY, ITS IMPORTANCE, ETC.—A PLAN PROPOSED.

MESSRS. EDITORS:—Spring has again returned, and soon will be seen "the tender blade, and then the ear, and after that, the full corn in the ear."

The hope-inspiring seed-time, the maturing summer and the golden autumn, which supply the "creature comforts" of each returning year, are all full of peculiar interest. With the bountiful harvests come also joyous festivals, and magnificent Agricultural comparisons, all tending to gladden the hearts of agriculturists and inspire them with new resolutions to excel all others. The noble spirit of emulation and research after TRUTH, which is excited by these exhibitions, is undoubtedly of incalculable benefit to the world. But whether they generally exert their full strength in the production of the most desirable results, is to me very doubtful. There is a way, if only known, to resist every invading hindrance to earth's yielding to the appliances of agricultural skill her fullest increase, so that every farmer may conscientiously give annually a receipt "*in full of all demands*" for every seed he has planted, and every blow he has struck

during the year. Every evil is subject to modification, if not to radical cure. Still the wheels of agricultural progress are retarded by clogs, which may and should be removed by the united efforts of town, county, and State, or national associations. The two most prominent evils, to my mind, are the prevailing ravages of insects, and the prevailing dishonesty of seedsmen, in whom farmers so confidingly trust, to their own hurt. To avert the first of these, every agriculturist should know, of himself, every insect with which his grounds are infested, in whichever of its varied forms and disguises he may find it. He will then know what to cherish as friendly to his interests, and what to destroy as noxious ones. And for the latter evil, let farmers get into the good old habit of raising their own seeds and elements of vegetation from their own choicest productions, and rely more implicitly on mutual exchanges with each other, especially for those standard varieties, which are good enough in themselves, and make their seeds, etc., subjects of exhibition and awards. They may also establish town depots, where every one who freely gives may as freely receive.

In relation to Entomology, there is no other science, not excepting Chemistry, which is more intimately associated with the advancement of agriculture. Nor is there any other class of men more eligibly situated for gaining an adequate, practical knowledge of it than farmers. They are surrounded on every side with the very best material for investigation. They scarcely turn up a stone, a stump or a furrow, or take a step in grass or grain fields, in gardens, orchards or woodlands, in spring and summer, or prepare fire-wood in winter, without meeting with some specimens of insect life, capable of yielding most valuable instruction. Their great difficulty is to know how to discriminate justly between the good and evil. The larvæ of to-day are very unlike the pupæ of to-morrow. If they spare one for its good looks, or any other cause, it may be the very species which does them most harm, and so *vice versa*. They are in the dark and seek for light. Let them have light and their interests will be comparatively safe. But *how*, isolated as they are from the halls of science, where, by the by, none too much is known of Entomology, are they to obtain it?

Till a better method of instruction is proposed, I would suggest, after the manner of showing up pick-pockets, etc., the showing up of the insect tribes in all their little less than "seven different stages." If a hand-book of plates, etc., can not be furnished for this purpose by Government or otherwise, and introduced into common schools, or at least into every farm-house, let Agricultural Societies take up the subject in good earnest, and offer such premiums as will induce

farmers, with their boys and girls, to preserve in alcohol, or by dipping in spirits of turpentine or chloroform and pinning up to dry, at least one specimen of all the insects they find during the year, and present them at their regular exhibitions. And let there be an especial department for this science, as there is for fruits, flowers, etc., and an entomological committee prepared to name and label every specimen presented, and illustrate its whole character to the exhibitors and all listeners, which would probably comprehend almost every farmer at the fair. And I feel warranted in saying that if this department should be managed as ably as it may be, thousands who have heretofore taken no interest in agricultural exhibitions will flock in, if for no other purpose than to gain what knowledge they can of a science of which they have, as yet, so little practical knowledge, and which they still sorely feel to be of the most vital importance to their success in terraculture. Farmers lack not only for scientific knowledge, but in confidence in their own ample abilities to acquire it. The following simple experiment, all farmers with their sons and daughters may try, and read as they run. When curculio-bitten plums, peaches, apples, etc., fall of themselves to the ground, it is because the larva within (remember this, singular larva, plural larvæ, the first stage from the egg) which is now grown from the egg deposited ten or twelve days previous, to a small, white maggot or grub, about one fourth or sixth of an inch in length, is about ready to enter the ground, where, in about thirteen days, it naturally changes to the second or *pupa* stage, (singular pupa, plural pupæ,) and then in about eight or nine days more, to a perfect beetle or curculio, in which form, when completed, it comes immediately up from the earth. It is, by the way, worth observing, that if the tree leans over running water, or pavement into which the larvæ cannot enter, the fruit will not be bitten; such is the sagacity of the insect. My plums and cherries are usually stung or bitten first about the last of May, and my first crop of curculios appears about the first of July, requiring a little more than one month for a complete revolution. But to continue the experiment:—When the fruit begins to fall in June, pick it up before the larvæ have time to escape into the earth, which usually requires two or three days, and put it into a large glass tumbler, or open-mouthed clear glass jar, with two or three inches of moist, clean sand in the bottom, and when full of plums, etc., tie a piece of thin cloth or muslin over the top to keep the curculio, when formed, from escaping. The larvæ will soon begin to work their way from the fruit down to the bottom of the vessel, where they can be observed, if the glass is transparent, day after day, through their whole process of transformation. For some days after they descend, there will be

but little apparent change, and then the *white* begins to assume a brownish cast, and the form changes to the *nympha*, *aurelia*, *cyrysalis* or *pupa* state, all four words meaning the same thing, namely the *second* stage from the egg, and last before the perfect insect form. By this, or similar experiments, a better general idea may be gained of insect manners and customs, with less labor and in less time, than by any other with which I am acquainted.

Long experience in school-keeping convinces me that entomology and other branches of natural history may be so introduced into our common schools as not only not to retard their usual studies, but to crown the labors of both teachers and scholars with renewed cheerfulness and success.

It is a most lamentable fact that thousands of naturally bright, healthy and intelligent children waste their common energies and come down to early graves, or worse, to deranged intellects, under the iron scourge of school discipline, and the conventional exactions and literary burdens imposed on them by mistaken teachers and parents. I speak advisedly, in saying that thousands perish annually by this "hot-bed" culture, who, if permitted to ramble daily through surrounding fields and forests, with cheerful, intelligent teachers and schoolmates, in search of natural productions—insects, flowers, grasses, minerals, etc.—would rise to high conditions of moral and physical life and usefulness. If, in all school-houses there were a department for natural history, a cabinet in which all scholars might safely deposit whatever of the beautiful or instructive they find in their researches, with the assurance of its being scientifically illustrated and labelled by teachers, visitors, or scientific school committees which might be appointed for that purpose, it would stimulate them to a much more rational and healthy zeal and emulation in the pursuit of all that is truly useful and desirable in the attainment of knowledge.

A new light, the light of nature, would spring up about their paths, and in her light they might learn to love her God. It is the *idle* time, the time which hangs *heavily* on the hands of our youth, which drags them down to perdition. He who in the love of nature finds new beauty in every step he takes abroad, finds no inclination, and no time for the contraction of evil habits, but is ever rising higher and higher above those gross defections, moral and physical, which infest schools subjected to a mere dry *book* study, arbitrary rules, and physical sloth; by a process as sure and natural as that by which noisome diseases, scurvy and death, creep in among ships' crews and companies when cut off from intercourse with the vegetable world, and subjected to uncongenial food. Yours truly, EASTMAN SANBORN.

ANDOVER, Mass., March 3, 1857.

We commend this excellent communication of our friend, Dr. San-

born, to the attention of all our readers, for all are personally interested in the subject of which he treats. The plan he proposes for a general introduction of definite and practical knowledge in relation to it, is worthy of the co-operation of all our societies. We have had thoughts of our own not unlike these, for a long time, and we are disposed to attempt a *practical experiment*, by way of beginning a great system of instruction in this important department of science. The reader will find our proposition upon a subsequent page of this number P.

CURRANT TREES.

HAVING noticed that currant bushes may as well be made trees as shrubs, I conclude to tell you how I have seen it done. In the spring of 1832 my father commenced a garden, and among other things he set cuttings for currant bushes. I determined to experiment on one of these cuttings; and as soon as it grew, I pinched off all the leaves except the top tuft, which I let grow. The cutting was about 14 inches long, and during the summer the sprout from this grew ten inches.

The next spring I pinched off all the leaves to about half way up the first year's growth, so as to have the lowest limbs two feet from the ground. It branched well and became a handsome little dwarf tree. When it came to bear fruit, it was more productive than any other bush in the garden, and the fruit larger.

It was uninfested with spiders and other insects; hens could not pick off the fruit, and grass and weeds were more easily kept from the roots. I would propose that currant cuttings be set in rows about four or five feet apart each way (let them be long, straight ones,) and trained into trees.—*Michigan Farmer.*

That currants should be so grown as not to form bushes, we do not doubt, and our practice has always been to prepare the cuttings by taking out all the eyes except the upper four, so that it should have a bare shaft of one foot high before commencing to throw branches. The cutting will form roots without eyes being left at or near the bottom, and thus no shoots will be thrown up from below. This is what we have understood to be a currant tree; but if the wood buds continue to be pinched off from the new growth until the shaft and continuations are so tall as to protect the fruit from hens, (particularly Shanghais,) we should fear that the heavy top would be an element of destruction to the body, particularly during high winds.— *Working Farmer.*

Whether the tree form is best for the currant is more than we know from experience. We have seen them cultivated in that form with good results; and we have obtained admirable returns both in quantity and quality, by cultivating them in clusters, properly thinned out every spring. The currant is easily produced in either way; and we advise all who have a patch of land, if no more, never to be without them, in their season, which is protracted, and when other fruits are not plenty. N.

LAND GRATEFUL FOR FAVORS.

A. B., in a little town on the banks of the Connecticut, rented a piece of land of a neighbor for the summer of 1855. It was good land, but had been long cropped without manure. A. B. planted it, applying no manure, and obtained a crop not worth the labor. The next spring the neighbor allowed him the use of it for 1856 at a trifling rent, on the ground that his former rent had turned out a hard bargain. He now applied 160 lbs. to the acre of Peruvian guano, planted for the same crop, and obtained what would have paid a high rent, paid well for the labor, and left a wide margin for profit. Probably if he had doubled the dose, the margin would have been wider. We advise him to try it in 1857 if he can get the land. The soil is grateful. N.

INSECTS

Injurious to Leaves of Trees and Shrubs.

CATERPILLARS.

The Common Catterpillar, or American Lackey Moth. Clisiocampa Americana, of Dr. Harris.

In May and June, the nests of these insects are visible in all apple orchards, and on cherry trees, wherever a watchful farmer has not been prompt to anticipate their coming, or to adopt measures to destroy them on their first appearance. The common name is derived from the diversified gay colors which these insects often exhibit; they have blue, red, and yellow stripes, which run longitudinally, and are straight and parallel. In this they differ from European insects of this genus. Their habits, in some respects, also differ. Hence, the propriety of separating them into a distinct species. Unlike the European, they can not subsist on evergreen trees. They are fond of the apple and cherry, and are sometimes found upon the plum tree, but seldom attack the peach. Some few of the forest trees are also subject to their ravages. Such are the shad bush, the willow, the native poplar, the white oak, etc.

LACKEY MOTH, FEMALE.

The eggs from which these caterpillars are produced, may be seen near the end of the twigs, often entirely surrounding them, and forming rings or belts, though sometimes they lie in masses, without forming a ring. Each nest contains three or four hundred ash gray or whitish eggs, of a cylindrical form, rounded at the ends, with a shell of a tough, leathery texture. They are glued in a perpendicular

position upon the twig, except those near the outer layers, which are placed in an inclined position, while the outermost rows lie horizontally on the bark. A glutinous coating, of a dark color, protects them from the weather, and from injury from other quarters.

These eggs are deposited early in July, and remain through the following winter till April or May, when the young caterpillars are hatched. The rain softens the glutinous matter which covers them, and the young insect easily gnaws for itself a passage by which it escapes from its confinement. They remain in dense clusters near the spot where they originate, feeding upon the young twig, until they gain strength to sustain the labor of traveling to more distant parts of the tree for food. After eating, they work awhile at their web, and then retire to rest. They spin a fine silken thread, which is attached to the bark, by which they render their hold upon the tree the more sure. At the fork of the branches, they surround the limbs with these threads, making a web not unlike that of a spider, adding daily to the strength of the structure, until it is able to endure storms, and furnish them a secure retreat. At first, the worms are scarcely a tenth of an inch in length. Their bodies are bigger towards the head, gradually tapering, of a black color, with a few whitish hairs. When full grown they are about two inches long, with black heads, a whitish line on their backs, with fine black waved lines or stripes, and spots on their sides. On the top of the eleventh ring is a small blackish hairy wart. They have regular hours for eating, but in rainy weather they remain within their webs.

During the first half of June, they separate, and wander about the tree, seeking a shelter where they may construct their cocoons and go through their transformations. The cocoon is of a long oval form, and after a while has a yellowish tinge. In two or three weeks after it is constructed, the chrysalis bursts its skin and becomes a miller, of a red rusty brown, with a mixture of gray on the middle and base of the fore wings, which are also crossed by two oblique, straight, dirty-white lines. Its wings expand an inch and a quarter or an inch and a half. It appears in great numbers in July, often entering houses during the evening, attracted by the lights, and darting about fitfully and rapidly, thumping against the walls and tables, and flying through the flame of the lights, till it becomes thoroughly scorched, and is glad to retire to a quiet spot, and remain at rest.

Among the means adopted to stay the ravages of this caterpillar, the first in the order of time and in importance, is the collection and destruction of the eggs. This may be done with the thumb-nail and finger, during the winter and early spring. After the caterpillars are hatched, and while they are still young, they may be effectually des-

troyed by crushing them by the hand in their nests. If the branches are too high to be thus reached, a stiff brush upon a long handle will serve nearly as well. But this work should be attended to before nine o'clock in the morning, at which time they leave their nests for their morning meal, or at mid-day, when they return to it. A sponge or a mop, filled with strong soapsuds may be substituted for the brush. Strong whitewash, or whale oil may be used instead of the soapsuds. The mop or sponge should be plied most thoroughly, and the liquid should be applied liberally to the insects, and it will assuredly destroy them. This service should be performed as soon as the nests are visible, and should be repeated at least once a week, until the caterpillars entirely disappear.

Another mode, recommended by Prof. Mapes, is to saturate the nest with a mixture of alcohol and camphene, and set it on fire. Still another plan, which seems to have met with various success, consists in boring into the tree and inserting some substance like sulphur, which is offensive to insects. The hole should be from four to six inches in depth, and after the sulphur is placed in it, stopped with a plug, that it may not be washed out by the rain. Some experiments made by Dr. Fitch, which were not successful, do not seem to us to have been wisely conducted, as they were tried upon limbs cut off from the tree when the vital forces needful to carry it into the circulation, would naturally be far less effective than in the living tree.

Other species of the Clisiocampa are sometimes found on apple trees, but they are not so numerous. One species, C. sylvatica, or "The Tent caterpillar of the forest," as Dr. Harris calls it, is very destructive to the oak tree, in Virginia. It is also found on the walnut. Its general color is light blue, greenish on the sides. But our present purpose has reference chiefly to fruit trees and garden shrubs.

There is another caterpillar of beautiful appearance, not occurring in such numbers, but living solitary and without any protection, upon the leaves of the apple and plum, and upon our rose-bushes, and upon several kinds of forest trees. It is the *Orygia leucostigma*, or the *American Vaporer moth*, an inch or more in length, slender, of a cream yellow color, with a black stripe upon the back, and two broader ones on the sides. Pale yellow hairs radiate from certain wart-like elevations, and on the fore part of the back are four brush-formed tufts of a deeper yellow color. Projecting upward from the hinder part of the back is a bundle of long black hairs, each hair minutely bearded, and knobbed at the end. A similar pencil projects from each side of the neck. They attain their growth and spin their cocoons late in July. The eggs of this insect are easily found in the winter, adhering to the cocoon, which is attached to a dead leaf, and

may be easily destroyed. The name *orygia* is of Greek origin, and was given on account of its resting with the fore legs extended.

The *Palmer worm;* Chætochilus pometellus of Stephens and Westwood, and the *Little snout mouth*, or Rhinosia pometella of some German authors and Dr. Harris. This worm, or naked caterpillar, is found not unfrequently upon the leaves of fruit and forest trees, in the latter half of June and very early in July. Sometimes they become so numerous as to be very destructive, converting green foliage into utter desolation. They come suddenly, and disappear as suddenly, abounding one day and no traces of them to be found the next. As they appear after the trees are covered with foliage, they are more destructive than the Clisiocampa. The worm or larva is thus described by Dr. Fitch:

"A pale yellowish-green worm, having a dusky or blackish stripe along each side of the back, with a narrower whitish stripe on its upper side, and a dusky line in the middle, with a shining yellow head of the hue of beeswax." When small, they are somewhat tapering, pale yellow, with a dark stripe along the middle of the back; above is a narrower whitish stripe, more or less distinct. They are pale, or whitish underneath; when approaching maturity they are generally of a pale green or yellowish green, but sometimes a sulphur yellow and flesh red are met with. When fully grown they are near half an inch in length, and nearly cylindrical. The body has thirteen segments, and is furnished with sixteen feet. The stripe on the back is the most constant, and also the most conspicuous mark of this worm. It resides in worm-eaten leaves, drawn together by silken threads, and when the limb is jarred they drop, hanging in the air suspended by a thread.

FIG. 1.

FIG. 2.

FIG. 3.

Fig. 1. is the Palmer worm, that is, the larva of the Palmer worm moth; Fig. 2. is the pupa, and Fig. 3. is the perfect moth of the Palmer worm.

The parent moth belongs, of course, to the order Lepidoptera, and the manner in which these caterpillars construct their nets, would indicate the group Tortricidæ. But for other analogies it is classified with the Tineidæ. These worms have generally appeared about the time the canker worms disappear. The difference between these two

insects is so great, that they can not well be confounded. The Palmer worm is not a Geometer, or Loop worm, but creeps without arching its body like the canker worm. The Palmer worm has sixteen legs, and the canker worm but ten.

The worm remains within the same tuft of leaves which the larva occupied, and covers itself with a web of so thin a texture that they are visible through it. The pupa is, at first, of a tawny yellow, and gradually changes to a darker color. In ten or twelve days after it ceases feeding and shuts itself up, the perfect insect comes forth. The wings of the moth expand about .65 of an inch. It is of an ash gray color; the fore wings are sprinkled with small black dots, and near the base of their fringe, towards the apex, are six or seven equi-distant black dots. There are also two larger brown dots before the middle, and two behind the middle of the wing, placed obliquely with regard to each other.

Several varieties of this moth are found, differing in the color of the fore wings, appearing sometimes a dull white or a pale tawny yellow, or with a pale purplish reflection, and sometimes we find three dots only on the fore wings, the anterior one being effaced, the four dots on the middle of the fore wings all wanting, the dots on the apex of the fore wings faint or wanting.

Showering the tree freely by means of a garden engine is useful in dislodging this worm. The thorough application of whale oil soap has also proved efficient. Any process which by jarring the leaves causes the worms to drop, will prove more or less efficacious. The worms, when suspended by their threads, may be caught in a tin pan smeared with tar, or otherwise collected and destroyed.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

PLANTING FOREST TREES.

MESSRS. EDITORS:—In my suggestions on the propriety and eventual profit of appropriating side hills and rocky pastures to the cultivation of forest trees, I supposed it was well understood that by these I meant such lands as were too steep and too rocky to admit of successful cultivation. Now, if I am not greatly mistaken, there are thousands of acres of such lands, (all lean, shallow soils may be included,) which do not now give produce enough, all told, to pay the interest of twenty dollars an acre. To what extent such lands in some localities can be reclaimed, or how well they will pay the investment after it is done, is not for me to say. One thing, however, is certain; timber of all kinds is getting scarce in our Eastern districts, and this scarcity is consuming the Western forests. While the supply is growing less every year, the demand is constantly increasing, and is likely to do so, perhaps, to all future time. Then, with all this consumption, where is the supply to come from, unless forest culture becomes one of the general cultures of the age?

The necessity of the thing seems apparent. To meet Yankee commendation, we know it must be shown to be profitable. We will suppose, then, that this acre of land, is held at $20, more, to be sure, than we would willingly pay for it, were covered with the Yellow Locust, a tree of pretty sure growth, one that provides for itself, and always leaves the land better than it finds it. Let every one estimate for himself, the expense of covering his land with it, protecting from cattle, etc., for these must vary in different sections. In twenty years let him cut off this timber, and see if his land and labor have not given him more than ten per cent. on cost of land and all other expenses.

What quantity of timber a thrifty locust will give in twenty years from planting, we have not now the means of judging. We have, however, just made an estimate from a tree planted twenty-seven years ago, then a mere shrub no larger than a whip-stock. Now, two feet above the ground, it gives a circumference of four feet and ten inches, which makes it at that point nearly twenty inches in diameter, with well-proportioned body and top. Any one conversant with trees can form an estimate of the amount of timber in it, near enough to decide whether it is worth raising. They can also estimate how many such trees can be grown upon an acre, and the probable market value of them now, and their prospective value twenty or twenty-five years hence, and decide whether their culture will be an object. This tree, counting all the time we bestowed in planting and caring for it, may have cost us fifty cents, for which we give receipt in full for the pleasure it has given us. For *fire-wood* it would probably bring us four dollars on the ground. But we are not making estimates for other localities; these are another affair.

We also measured a white elm planted at nearly the same time—it might vary a year. This gave four feet seven inches girth, and would give more than a cord of wood; we don't know how much. But for timber it would be worth more. A sugar or rock maple planted out, a mere sapling, about the same time, and near by, gave a girth, of three feet seven and a half inches, with a tall, handsome trunk and heavy top.

In bringing old lands into forests, a query may arise, as to the best way, whether to sow the seed or plant the trees. Where circumstances will permit, we should commend the former course, from the fact that any tree will succeed best if it grow undisturbed. It is an object to have them so thick as to shade the whole ground as soon as possible, for the shade will preserve moisture, so essential to their growth, and if they stand thick, it will prevent the leaves from blowing away when they fall, and thus retain them to manure and loosen the soil. Now it is certain that a crop of young trees can be made to cover an acre *cheaper* from the seed than by transplanting. If they become too thick for their own convenience, the more imperfect and feeble ones will die out to make room for the thrifty.

The idea that anything is gained by setting out trees to gain time, we consider in most cases pernicious. When a tree springs up and is allowed to remain, it enjoys an unrestrained growth. Nature adapts the roots and branches to meet its demands. Where trees are removed, they are very apt to suffer from mutilation of roots and change of soil, so that their growth is checked and disease often results; hence in these matters, a delay of growth often results in eight years more than equal to the size of the tree when transplanted.

In seeding land for a forest, we would introduce as great a variety of the valuable timbers as the soil and circumstances of convenience would permit; for as each species of tree is somewhat different in its constitutional habits, each would thrive on food that some other species had rejected. This is nature, and it is illustrated often in forests where it can be particularly observed. Yours truly, WILLIAM BACON.

RICHMOND, March 2, 1857.

We consider the above suggestions exceedingly valuable. Thousands of acres good for nothing else, should be made to grow timber. It will pay after a time. Meanwhile, the growing forests will meliorate the climate, conceal the deformities of a region, render it more desirable as a place of residence, and thus increase the value of farms, so that if the planter of a forest should not live to see it full grown, or should dispose of his farm while the trees are yet young, his labor would not be wholly unrewarded.

We like the idea of planting the seed instead of setting young trees, as certainly the least expensive, and we believe the speediest way. The seeds of trees should not be covered in a mellow soil, like those of annual plants. The ground being *hard* is no objection, provided it be kept mulched, so as to be always cool and moist. We must observe and follow nature. A shoot of corn will grow best in a rich, loose soil; but a chestnut will send up a stronger and larger shoot from a cow-path over a gravelly soil, hardly trodden. This we have often observed.

Much of the land which ought to be to be covered with trees, especially in the Eastern States, is hard, gravelly, too full of boulders to think of ploughing. If the seeds of various trees, as Mr. Bacon suggests, were put upon the turf, covered only with a mulching of leaves sufficiently thick to preserve them always moist, the leaves to be kept from blowing away by a slight covering of straw, salt hay, or even by bits of turf carelessly thrown over them, they would germinate and grow with more rapidity even than if buried in a loosened soil. Two thirds of the whole expense would consist in fencing, as it would be necessary to keep the cattle off.

Autumn would be the best time for doing the work. If done in spring, the seeds should be kept in a cold moist condition till planted. Few tree seeds will germinate vigorously after being fully dried. November or December would be the preferable months. If the design were to produce a locust grove for fencing posts, railroad ties, or ship timber, of course the seeds of this tree alone would be planted, or rather mulched down on the turf.

But if the object were to get the greatest possible growth of anything in the way of fuel or timber, we would put in all sorts of seeds natural to the country, enough of each to stock the ground. Those for which that soil was adapted, would triumph over the others. The ground after a few years would not be overstocked; and if more seeds came up than could grow permanently, the effect would be to shade the ground, to strew it annually with leaves, and to prevent the leaves from blowing away or into heaps.

The idea of planting on the turf, with only a covering of mulch, we believe is new; and we are aware that it will strike many of our readers as an odd fancy; but it is following nature; and we ask any who may be disposed to ridicule the

recommendation, to look about them, and inquire if the finest trees in their farms did not spring up from seed, placed in just about the conditions we have described—dropped on the ground, covered with falling leaves and then let alone.

We thank Mr. Bacon for his suggestions, as we believe many of our readers will, especially if they will follow his advice and get their worst lands—those now a blot on the farm—covered with trees. Of course we would not recommend the treatment we have described, for land having much capability.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

ILLINOIS—EDUCATION, AGRICULTURE, ETC.

BERLIN, ILL., Feb. 5, 1857.

EDITORS OF THE PLOUGH, LOOM AND ANVIL:—I doubt not that a word from Central Illinois in regard to her agricultural interest and prospects will be acceptable to *The Plough, Loom and Anvil.*

Our farmers, mechanics and tradesmen, are receiving an ample reward in the way of paying prices for their labor, skill, and enterprise. All kinds of labor and property, real, personal, and mixed, are bringing fine prices, with an upward tendency. At no time since the first settlement of our Prairie State has the increase of population been so great as now. The skill, industry and enterprise of our citizens in developing the resources of the State, will soon make Illinois the second if not the first agricultural State in the Union.

Railroads are multiplying with a rapidity hitherto unknown. Education is beginning to engage the attention of our people; the principle of sustaining common schools by taxation has been adopted, and I trust it may be extended until it shall carry a liberal common school education to every child in the State. A government like ours, which is based upon the intelligence of the people, should recognize a good education as the birthright of every American child.

The crops of the past year, as a whole, are below an average crop, but the excess of the crops of 1855 gives a good average crop for 1856 in Central Illinois. The beef of this portion of the State has been, and is now, selling for March and April delivery, at from $4 00 to $4 50 per hundred, gross, on the farm. Hogs for spring market sell at from $4 00 to $4 50 per hundred, gross. Wheat is worth $1 00 per bushel. Oats are worth 30c. per bushel. Hay is $20 00 per ton; Corn 20c. per bushel, of 56 lbs. Mules and horses are high, say from $100 to $150 per head. Working oxen bring from $80 to $150 per yoke. Wild or unimproved lands are worth from $12 to $20 per acre; improved from $25 to $50. Lands improved rent steadily at from $2 75 to $3 50 per acre.

Our State Agricultural Society is in a prosperous condition, with about four thousand dollars in the treasury. The Executive Committee meet on the 4th of March, to make arrangements for the next fair, and to fix on the time and place for the same. They have determined to offer ten thousand dollars in premiums. We have about seventy county societies in the State, as the fruits of the State organization. We have formed a stock importing company this winter, with a capital stock of twenty-five thousand dollars, and have selected our agents. They will leave New-York the first of May for England. Jas. N.

Brown, I. H. Jacoby, of Sangamon Co., H. C. Johns, of Macon Co., are the agents of the company. It is the intention of the company to import cattle, horses, sheep, and hogs. Yours truly, JAS. N. BROWN.

WINTER MANAGEMENT OF CATTLE.

WHILE traveling through Bainbridge, N. Y., a short time since, I was kindly entertained by Mr. John Banks, a young farmer of much spirit and enterprise, and as he has a "new" mode (to me) of feeding his cattle, which I think worthy of description, let me attempt it for your paper.

Mr. Banks does not stable his cattle, but allows them an open shed and yard, with stalls two and a half feet wide, to feed in. The hay or straw is thrown into the manger from above, which is all eaten without the least waste—they are prevented by an upright from getting into the manger.

My impression at first sight was, that the cattle occupying the stalls would be liable to be injured from others "hooking" them, but the elevation of the stalls of about ten inches, is a preventive for this. No animal can injure another with head up; a savage brute always goes with its head down when bent on mischief; therefore cattle are all safe when in them. To more fully convince me on this point, I saw the underling cattle run there for protection, and then feed without fear.

Mr. Banks has a trough of running water in his barnyard. The cattle go in and eat until thirsty, when they go out and drink, return into another stall and feed again, having an opportunity to eat and drink as it suits their palate, which in my opinion much benefits their condition. When stabled they are only watered once a day; they drink too much, and frequently stand shivering in the cold a long time afterward, much to their injury.—*Country Gentleman.*

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

EXTREMES OF COLD.

THE extreme cold having abated, and my ink thawed, I will inform you of some of the extremes of the weather here for some twenty years. I have for that length of time kept a diary of the weather, noted the range of the thermometer three times each day, and the barometer occasionally.

January 4th, 1835, the mercury stood at 36° below zero; this was the coldest it had been since I kept a record. In many places in the State the same morning it stood at 40° below. The mercury in my location did not range below 36° in '35 until 7th Jan., '55, when it stood at 38° below. The 5th and 7th of September, '56, it stood at 34° below, 10th of March, 36° below at sunrise. The 18th of Jan., '57, the mercury in the morning stood 28°, noon 10°, sunset 12° below zero; wind N.W. and cloudy; a very severe day—many were frost-bitten. 23d of Jan., at sunrise the mercury stood at 30°, noon 20°, sunset 24° below zero; wind strong N.W. and cloudy; probably as severe a day as was ever experienced in this vicinity. Some perished. The 24th, sunrise, the mercury stood 42·5°, exceeding any record of mine for twenty years; this morning many people blistered their hands by taking hold of cold iron. The 18th and 19th it snowed and blustered 48 hours, and the snow fell some eighteen inches, thus far our winter has been more severe than any one for twenty years; it appears it has been so throughout our UNION, which I have a strong desire may be preserved. ARIEL HUNTON.

HYDEPARK, 13th Feb., 1857.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

IMPROVE THE MAN, AND YOU IMPROVE THE BUSINESS.

MISSISSIPPI, Jan. 13th, 1857.

MESSRS. EDITORS:—Your January number was received to-day, and looks so fresh and comely in its neat Quaker costume, that I fancy a decided improved exterior, and then the very first article, the leader, friend N., stands up to the farmer so much like a true knight, that I needs must thank him.

The farmers of America enjoy blessings that they cannot be aware of. A master of his own soil! an *equal to any man!* opportunity to improve mind, beyond all other people!! Yet with all this they feel not that they are sovereigns indeed and in truth. The young lawyer, without his first fee, and his coat perhaps not paid for, speaks of the sovereigns, but he looks down upon them unless he has use for them. and the farmer seems to feel he is "small potatoes." Farmers are greatly to blame themselves; they ridicule "book-farming," and thus their children do not strive to be informed on agriculture, or ought else, if to be farmers. Instead of which, fathers should exalt education as much in the farmer as in the lawyer or doctor. But the greatest evil is a want of proper thinking on farm matters. Whenever farmers place their minds on their business, endeavor to understand what they are at, have a proper conception of what a farmer should know, we will see more reading, reflection, and a higher appreciation of their profession. The masses think any one can farm; anybody can be a farmer. As well can any one be a doctor, or a lawyer, or a preacher—for certainly there are some "*precious*" ignorant men among them.

The farmer has as much need of knowledge as any man that breathes. In this country more need than with you. A farmer not only has to know when and how to plant and cultivate and gather and prepare for market or for home consumption, but he has at times to be his own doctor, architect, builder. He is called on, sometimes, by a neighbor for advice in some difficulty. But admit that he has no interest save the field, and he has enough there to employ the mind of the greatest. Here is a levee, there a ditch, here a bridge, there a rotation; to try the one seed or the other; selecting better seed; proper crosses for his animals, etc. Who can tell what a farmer should know? Any of us can tell at once what he should not know—to do wrong or to feel the inferiority of his position.

By the time the farmers of America learn how best to plant, cultivate, gather; best stock for home use; best crops for sale and home; how to breed stock; best rotation, manures, etc., in this line, they have only entered upon the threshold, for they should know as to the means of preserving health, as to the wants of our race, our country; then there are many little matters, such as proper buildings for health, comfort and economy, both for man and beast, length of time from open bloom to mature fruit, injurious insects, etc.

There are many who never find the time to learn anything, but they can find time to sit down at 12 for an hour or two, they can visit once or twice per week, they can hunt, fish and talk politics. This time, if used in reading and reflection, would soon be seen in the farm.

Every farmer should strive to improve; it is as much his duty as it is of the doctor. Why should one man be praised for his striving, or condemned for indolence, more than another? Farmers by their large numbers can change all this, and it is a sacred duty devolving on them. Yours, P. P.

EXTRACTS FROM PROF. HADDOCK'S ADDRESS BEFORE THE NEW-HAMPSHIRE STATE AGRICULTURAL SOCIETY.

Literature of Agriculture.—With us what may be called the literature of agriculture is all changed. It is no longer a subject of poetry. The country gods are dead; Pan and Sylvanus, Bacchus and Ceres are no more. The constellations have lost their influence; the moon herself is on the wane of her terrestrial power. The Fauns and Dryads have vanished from the woods and fountains. There can be no other Georgics or Bucolics; no other Theocritus or Virgil. The romance of farming is gone; gone the shepherd's pipe, the rustic loves, the pastoral contests, all the cheerful illusions of the country in the old rural life of Europe. In place of romance we have reality; for fiction we have fact; poetry has given way to truth. And, though we have lost a good deal, we have gained more. The variety of natural knowledge, which modern science has brought within the farmer's reach, and the sources of intelligent happiness thus opened to a man of taste in the country, more than compensate for the lost romance of pastoral life.

Science of Agriculture.—Agriculture, *as a science*, is little older than the present generation. The branches of knowledge, to which we are indebted for the chief improvements we have made in this science, are themselves of recent origin. Chemistry, geology, minerology, botany and vegetable physiology are all essentially modern. Their relations to the cultivation of the earth, and the development of its resources for the sustenance and happiness of man, were but imperfectly understood before the present century. Within this period, agriculture may be said to have acquired something of the demonstration, the method, the dignity of science. This result, it is true, is owing not wholly to our greatly improved knowledge of nature; it is due, also, in some degree, to the stimulus derived by agriculture, from the rapid extension of international commerce, and the miraculous improvement of internal communication in the principal states of the world. The opening of new markets and the introduction of a grander scale of agriculture, in the great grain-growing countries, have led to the study of principles, and the invention of new instruments, and given rise to intelligent experiments, that have, in the most productive countries, revolutionized the whole system of culture.

The Farmer.—To him alone the true idea of home is fully realized. His own acres subdued by his own industry; the orchard planted by his own hand; the house in which his children were born, and where he has known so much to love, and felt so much to remember; the brook, the hill-top, the wood—all his, and all endeared to him by holy memories—these belong to him as nothing else can; these are his home; these, the world he loves too well and is never quite ready to leave; the inheritance, he would fain hope, of his children and his children's children. A cultivated farmer is the happiest of men, and, though Virgil intimates that he does not know it—"happy farmers if they only knew it"—I am disposed to think he is fast finding it out. What Cato so long ago and so justly said of his profession—"*maxime pius quaestus et stabilissimus*"—the most innocent and the most stable of pursuits—is too apparent not to be seen. As soon as the farmer has learned that we do not live to work, but work to live, and to the consciousness of possessing, in his own right, a portion of the earth's surface, has added some of the comforts of life, the luxuries of a cultivated home, the resources of intelligence and taste, it seems to me there is not, in the world, a condition more happy, and I may add, more respectable. "Agriculture," says Columella, "is not only a near neighbor of Philosophy, but a blood relation." Most certainly, true wisdom, if found any where, is found oftenest where men see most distinctly the footsteps of the Deity, and receive their blessing most directly from the Divine hand. The farmer has reason to be satisfied with his profession.

The Glorious West.—I lately crossed the ocean of verdure, rolling in magnificence, and rich with the hues of harvest, between the city of Chicago and

Madison in Wisconsin. It was a sight to remember. But I could not but ask myself, what can a man do with such land? It needs not to be subdued; it can not be enriched. Agriculture, there, seems like fishing in a new stream, where one has nothing to do but to haul in the line. Sir Isaac Walton or Sir Humphrey Davy, to enjoy a salmon, must have spent a forenoon in taking him. To be seen carrying home a bushel of fish, that have been drawn out of one deep hole, in fifteen minutes, what would that be to a man whose piscatory art is recorded upon every river in Europe?

Agricultural Instruction.—We need, in the first place, and above all things, an Institution, or a Department in some Institution, for instruction in this branch of learning. It is, now, a branch of learning, capable of being presented to young men in an attractive form. The science of agriculture is not mere theory, book-knowledge, to be contrasted with experience, fit only for gentlemen farmers; it is experience itself, the most reliable experience, the best considered and best digested experience. Its principles, so called, are true facts—facts well attested and clearly stated; opposed only to unreasoned, unintelligent tradition, in which length of days passes for wisdom. It is a complaint as old as the first treatises upon husbandry, that, though every other art is taught, the art which lies at the foundation of all the rest, the art of cultivating the earth, is left to be practiced without instruction. "I cannot sufficiently wonder," says a Roman writer, "that they who build, call carpenters and architects; they who trust ships to the sea, employ men skilled in navigation; they who make war, men taught in arms; and that farming alone, the nearest to, and, as it were, kindred of, Philosophy, wants both pupils and teachers. Neither professors nor disciples of agriculture have I ever known. And yet without agriculturists, mortals can neither subsist nor be nourished."

A Professor of Agriculture, whose residence should be some seat of learning, would be a radiating point of intelligence upon the subject. His duties should include a course of lectures in every county and principal town of the State. Bringing us more acquainted with our own resources, and with the improvements made in other States and other countries; a sensible man, devoted to the business, could hardly fail to exert a most salutary influence, and to give a new impulse to the whole agricultural mind of the State.

Connection of Agriculture with the Mechanic Arts.—Another object, of which we should never lose sight, and which interests the town and the country alike, is the encouragement of domestic manufactures. The inhabitant of the city is not more interested in the prosperity of its young and growing manufactures than is the farming community about it. Every village in the State is a market for agricultural products—a domestic market; and the most prosperous agriculture is in the vicinity of such markets. There is the domestic agricultural population. It is ascertained by the recent census of New-York, that the counties of that State, which have domestic markets in their manufacturing places, have a good deal increased in population during the last five years; and that those counties, which have no such markets, have diminished. The same thing is said to be true in New-Hampshire. We cannot go, upon equal terms, with other parts of the country, into the great markets. We must have a market nearer home, a market for products that do not bear much transportation, a market adapted to our products; and our products must be adapted to our market. Manufactures in every town, a mill upon every stream, is our true policy. Thus our immense water-power, our large tracts of wood-land, our mineral treasures may be made to conspire with our agriculture in a common production to which it is not easy to set limits; upon which I do not think it extravagant to say that two millions of people may be subsisted in comfort and independence. The Kingdom of Portugal has about three times the number of square miles, with quite as large a proportion of waste land, as New-Hampshire. And yet, almost without manufactures, she sustains three and a half millions of men.

The Garden.—Men used to large operations in the field are apt to neglect, and often to despise, the petty processes of the garden; and the very families,

that should enjoy them most, are often the least provided with the nutritious and delicate fruits and plants suited to our climate.

One for a little time accustomed to what I may call the domestic scenery of the old world, is struck with the baldness and homeliness, and poverty of delicacies, about the majority of our New-England farm-houses. We seem to have yet to learn that, in addition to the boundless variety of beauty and enjoyment afforded by a garden, a family may be nearly supported by its products for half the year, and it seems to me, in better health and greater happiness than upon the grosser and costlier meats of which we consume so much more than other people in the world. To the simpler diet and the larger proportion of vegetables consumed in the old world, we must, I think, chiefly ascribe the appearance of of superior health and strength, especially in the female sex, on the other side of the sea. A pound of sugar costs less than a pound of beef; and plenty of sugar, plenty of flour, and plenty of fruit, are no mean fare.

With a near market, the garden is the most profitable part of a farm. So much value is not produced anywhere else, in proportion to the cost of production. Within a reasonable distance of market, a professional gardener will pay his own wages and a good return for the land, besides supplying his family with all the vegetable luxuries of the climate. Roots and fruits and flowers all pay.

The garden, too, is *woman's* proper, and only proper, sphere of out-door labor; here she finds a natural theatre for her taste, and a remedy for half her ills. The garden is her academy and her gymnasium, her school of beauty. Here are the graces, one with her rose in her hand, and another with her branch of myrtle. In their society she breathes the fragrant morning air, and rests at noon in the shade of the vine which her own fingers have trained. It is wonderful, the miracle which her hands work here, the beauty and loveliness that bloom under her eye. The garden is our paradise regained.

Intelligent horticulture is a practical teacher of the farmer. It shows him how much a very little land may be made to do. No mistake seems harder to correct than that of cultivating more than we can cultivate well. The Romans had an apologue of a vinedresser, who had two daughters. When the first was married, he gave her a third of the vineyard; but raised as much as before. When the second was married, he divided the remaining two thirds with her; and still raised the same quantity of produce as from the whole. Writers have repeated the lesson from the days of Rome to our own. But the error is not corrected; the insane passion for land still stands in the way of perfect culture. Till it is corrected, we shall never know the full capacity of our soil, the true felicity of our condition.

Liberal Education.—The only other suggestion with which I will detain you is, that a liberal education is no disqualification for agricultural life. Such an education has been too much regarded as well nigh thrown away upon men who do not go into one of the liberal professions; as if there was any sphere of life for which a full grown man is not the best fitted. A full grown man is a well taught, a thoroughly educated man, a man whose mental and physical powers, freely developed by proper culture, have reached their natural stature, and ripened to their full maturity. This may possibly be done without the aid of schools. Degrees and diplomas are not necessary to it. But they are a species of machinery for effecting, in less time and more perfectly, what may sometimes be done, and with resolution, can always be done without them.

In the first period of our New-England history, a classical education was deemed essential only to the clergy. The catalogue of the graduates of the venerable University of Cambridge, shows a large majority of the early classes, in some cases four fifths, to have been clergymen. Somewhat later, the profession of the law required a Degree as a qualification for practice. The medical profession have but recently begun to lay much stress on such attainments. To some one of these departments of life, educated young men are nearly all directed. But in no pursuit, in my judgment, is educated talent more requisite than in that of agriculture; no where is an educated man more in his proper

place, no where has he an ampler field or worthier objects, or a fairer prospect of success and happiness.

May we not hope that more of our educated young men, that not a few of them, may be induced to employ their disciplined judgment and mature taste, in improving the agriculture of their native States? We all look forward to the quiet life of the country as the refuge and solace of our age. There is something beautiful in the thought of at last quitting the dust of the town and the strifes of life, and coming back to die in the place where we were born, in view of the fields familiar to our childhood. But there is something more beautiful in the thought of ending a useful and happy life, on the spot of earth made fertile and lovely by our own care, and full of the memorials of our own success.

CAPITAL.—WHAT?

THE following extract from De Bow's Review, may suggest valuable thoughts to the mind of the thoughtful reader. P.

"Capital," says Prof. Rickards, "is the produce of past labor saved from immediate consumption, and employed for the purpose of producing something else."* This is assuredly a very definite definition, especially in its latter clause; but it agrees in the main, though not entirely, with the definitions of other Political Economists, and serves to establish a distinction, perhaps too wide for accuracy, between capital and land, or labor. Say gives no formal definition that we can discover; he enumerates the species and explains the process of the formation and multiplication of productive capital.† The younger Mill informs us that the "accumulated stock of the produce of labor is termed capital."‡ This is more definite and generic than the language of Mr. Rickards, and it omits his restriction of the appellation to values employed in reproduction. Dr. Cooper, whose Manual of Political Economy is one of the most lucid and convenient expositions of the science, declares capital to be "that portion of a man's revenue which remains as a surplus or saving after all his expenditures are made."‖ This is obviously incorrect, both in expression and in meaning. The surplus indicated may be the residue of rents, profits, wages, or treasure trove; it may become capital, but it is not so of its own nature. The expenditures, too, may in part be already capital invested in reproduction; but they are excluded from consideration by the terms employed. Moreover, the meaning of an abstract term cannot be defined by a particular example, and the contrast is certainly complete between capital and revenue. The elder Mill explains, but does not define. He affords, however, a sufficient intimation of his views by remarking, that "the instruments which aid labor, and the materials on which it is employed, are all that can be correctly included in the idea of capital."§ Adam Smith was not partial to definitions, nor was he felicitous in constructing them. He furnishes none of capital, but his language implies that he understood it to mean the accumulated result of past savings, and, as he held that "labor is the ultimate price which is paid for everything,"¶ capital, in his system, would signify the accumulated results saved from past labor. McCulloch's Treatise on Political Economy is not now within our reach, but in his annotations on the Wealth of Nations, he remarks that "it is enough to make an article be regarded as capital, that it can either directly contribute to the support of man, or assist him in appropriating or producing commodities."** This is an indication rather than a definition; it is very vague, and is obviously too

---

* Population and Capital, Lecture I., p. 7.
† Political Economy, B. i, ch. iii., pp. 71–2; ch. xi, pp. 109–111; Am. Ed.
‡ Principles of Political Economy, B. i, ch. iv, sec. i.
‖ Lectures on the Elements of Political Economy, chap. ii, p. 31.
§ Elements of Political Economy, chap. i, sec. ii, pp. 16–18.
¶ Wealth of Nations, B. i, chap. xi, p. 87.
** Wealth of Nations, B. i, chap. i, p. 120, note.

large, not only for scientific precision, but even for popular accuracy. The hand, the eye, the wind, the ocean, everything in the physical constitution of the universe, and in the moral, intellectual, and physical constitution of man is embraced in the ample and uncertain language of McCulloch. According to him, everything is capital, which may be instrumental in producing anything that may become capital.

It is unnecessary to extend further our search amongst the Political Economists for a definition of capital. We shall find neither the precision, nor the agreement, which might have been expected in regard to such an important and fundamental principle of the science. At the same time, we are not disposed to insist upon the disagreement. From the definitions exhibited, it will be evident, that it would be easy to find strong grounds for censure, if our object was to detect and enlarge upon the weak points of the science, instead of being to discover the common ground of agreement, which reconciles all the professors of the school, and may furnish a distinct notion of the essential character of capital. Such a principle of harmony we believe to exist, and have accordingly said that Mr. Rickard's definition was in accordance with the general doctrine. The main defect everywhere, is the absence of lucidity of conception and expression. In some definitions, there is surplusage, in others deficiency, in all indistinctness. The indecision of the original exposition of the nature of capital is, in great measure, obviated in the process of the development of the science, by the introduction of the species of capital, such as productive and unproductive, circulating and vested, instruments, provisions, and raw materials. There is, moreover, some excuse for the want of technical precision, arising from the fact that Political Economy is not an abstract, but an applied science. It deals with the practical transactions of life in their concrete form, and is continually and inevitably immersed in matter, according to the expression of Lord Bacon.

There is one idea necessarily involved in the conception of capital, which is not prominently exposed in any of the definitions quoted, this is the idea of exchangeable value. But value is unfortunately a term more fluctuating in its employment, more various in its meanings than even capital itself. Exchangeable value is also as changeable in reality, as it is in our language. Not only is there no such thing as a common measure of value, but the reciprocal relations of values are at all times oscilating and uncertain. It would, therefore, be extremely hazardous, to introduce a term so slippery into the body of a definition, but it is impossible to exclude it altogether from our conception of capital, without restricting ourselves, as many Political Economists have done, to the mere specification of the particular things which may be regarded as capital. Many of the perplexities of Political Economy may, perhaps, be attributable to the unsteady nature of the latent idea of exchangeable value.

Were it not for the embarrassments intimated, there might be no objection to defining capital as the exchangeable values accumulated from the productions of past labor. Undoubtedly Capital and Labor are conjoined in all efficient production in any society advanced beyond the extreme rudeness of savage life. But it is always possible to trace back the genealogical descent of production to the time when the acquisitions of man were limited to those won by the unaided labor of his own two hands. Even then, however, the rudimentary gem of the functions of capital, might be detected or imagined in the natural support supplied by the mother to her infant, and in the maintenance of the yet impotent child.

THE SUGAR CROP FOR 1857.

A FRIEND writing from New-Orleans, March 2d, gives a very favorable account of the prospects of the coming crop of sugar. He says:

"Never before was it so cheering. The weather during the entire month of February was extraordinary, even for this State. It was the weather which *you*

have in June. Consequently, the young cane is a month earlier than usual, and if no severe frost, or other unforeseen calamity should blast the prospects of the planters, the crop will be unprecedented. The young cane is not only earlier, but the quality is all that could be desired. My opinion is, bating the contingencies just referred to, that the crop will be as much *beyond* the average the present year, as it was *below* last year.

Manufactures, Mechanics, etc.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

MANUFACTURE OF WHIPS IN MASSACHUSETTS.

MESSRS. EDITORS:—Massachusetts has long been distinguished as one of the leading States in the extent and variety of her manufactures. Her numerous railroads, like one vast net work, traverse nearly every portion of her territory, and her mills and manufactures enliven the banks of her streams and rivers. The hum of industry is heard throughout her borders, and even her inland towns and villages are cheerful with the song of labor. These are facts that impress the mind of every observant traveler who passes through the various thoroughfares of this flourishing commonwealth; and more particularly, if he should have occasion to stop on a pleasant afternoon at some of her inland towns, more fully to become acquainted with her resources.

Having occasion, a few weeks since, to pass over the railroad from Springfield to Hudson, we availed ourself of the opportunity to spend an afternoon and evening in the quiet and pleasant village of Westfield. This place is about ten miles from Springfield, situated nearly in the center of the town of the same name, on the banks of the Westfield river, which, with its tributary branches, affords several good water privileges. The village is very delightfully located on a level plain, partially environed with gentle hills, particularly on the north. The village is very conveniently laid out, with broad streets adorned with noble shade trees, and contains a handsome public square near its center. Its principal public buildings are, a good town-house, an academy, two or three fine churches, two banking houses, and several other public edifices. The aggregate banking capital employed is about $200,000, and the principal business establishments of Westfield consist of two printing offices, each issuing a weekly newspaper; one cotton factory, two paper mills, three grist mills, six saw mills, one plane factory, one hat factory, two powder mills, and several whip manufactories. The literary institutions of the place indicate a highly intellectual and cultivated society. These consist of an excellent normal school, a flourishing academy, and eighteen public schools. The population of the village is about 1200, and that of the entire town about 4,500.

It will be perceived that there is no lack of energy and enterprise on the part of the inhabitants. The capital invested in the various kinds of manufactures is large, and continually increasing. One of the principal establishments in the village is the *American Whip Company*, a joint stock company, established

about two years since, with a capital stock of $175,000. The business of this association is to manufacture whips of all descriptions, by means of improved steam machinery. The building is a fine structure, plainly but substantially built, and constructed with special reference, in all its departments, both to convenience and utility. The entire structure is warmed by the waste steam from the engine, and so perfect is the machinery, with so little friction in any of its parts, that the whole is operated by a single twelve-horse-power engine. With scarcely any perceptible jarring, and perfectly noiseless in its steady motion, this engine, miniature in size and beautiful in finish, moves the whole as with a charmed power, unseen only in the result. It is, in reality, a fine specimen of mechanical skill and perfect workmanship.

We were very politely shown through the various departments by one of the Directors, who, by the by, is an operator in the establishment, and every part of the process of whip-making intelligently described, from the first sawing out of the rough material of the stock, to the braiding and adjusting of the silken top, or as the juvenile equestrian would term it "*snapper*" appended to the lash. A large portion of the labor is performed by machinery. The wood portion of the filling of the stock is sawed and fitted, and after being glued and adjusted, is turned to its symmetrical form and proper size,—the whole covered with its delicate and ingeniously braided network of linen, whalebone, and in some instances silver wire, and lastly, the finishing silken tip of the lash, most exquisitely braided by the most ingenious machinery. The latter is done in an apartment from which all persons, except the workmen, are very properly excluded, unless introduced by some friend, or by one of the Directors of the company. The very ingeniously constructed machinery by which this complicated operation is performed is really surprising, and seems almost to manifest a degree of human intelligence. The readiness with which its steel fingers and needles take up the silken or linen threads, unwind them from their spools, and adjust them in all their intricate sinuosities on the braided cord; and when the operation is completed, at the simple touch of the attendant, instantaneously drop into perfect repose, is really astonishing, and evinces wonderful ingenuity in the inventor.

A large proportion of the labor in whip-making is performed by machinery, but certain parts of it are still the results of hand industry, particularly that of braiding the leather thongs. This, to a considerable extent, is done by females, who become exceedingly skillful and expeditious in the operation. Many of this class are engaged at the manufactory, while others, both men and girls, are employed in various parts of the town and vicinity, in preparing certain portions of the work for being finished at the manufactory.

The kinds of whips manufactured, embrace almost every variety in use. The peculiarities of each depend on the locality where used, and the uses to which they are to be applied. For the Western trade, the long, heavy, *prairie whip* is required. The whips for the South are the beautiful flexible *riding whip*, and the heavily *loaded whip* of the plantation. For New-England the *different* varieties of *carriage whips* are mostly required. While the elegant and delicate *saddle whip* is sold to some considerable extent in various parts of the country.

The amount of stock which is annually manufactured by this company is about $500,000. It employs altogether, about 450 to 500 men and 50 females.

The quantity of whips made by the company is enormous. We were informed that of one kind alone, it turns out *one hundred dozens per day*, and altogether, it is estimated that two-thirds of all the whips manufactured in this country, bear the mark of the "American Whip Company."

A very large quantity of leather is used at this establishment. This consists mostly of horse hides and buckskin, of which *thirty* to *fifty thousand* are annually required. *Thirty thousand pounds of bone* are also used, and *one hundred and fifty thousand pounds of rattan*. A large quantity of whalebone is also applied in the manufacture of the finer varieties of whips, and many thousand dollars are expended every year for this material alone. A large amount is also paid for ivory, trimming, etc., etc., not included in the above.

The officers of this company are Hiram Harrison, Esq., President; Reuben Noble, Treasurer; Patrick Brise, Clerk; and Reuben Loomis, principal Director. As a proof of their efficiency and good management, the company last year made a dividend of twenty-five per cent. on their stock invested. Their energy and enterprise fully entitle them to the success that attends their effort.

There were formerly about twenty whip manufactories in Westfield, using generally but little machinery in the business, until the present company was organized. This absorbed some of the smaller establishments. There is still, however, a large amount of capital invested in the whip manufacture, independent of that employed by the American Whip Company, all of which, we believe, is remunerative to those engaged in it. S.

NEW AND PRAISEWORTY FEATURE IN A MANUFACTURING ESTABLISHMENT.

At the Atlantic Cotton Mills, in Lawrence, Mass., a (mammoth establishment of 52,000 spindles and 1100 operatives,) a course of Lectures and Concerts, *free* to the operatives connected therewith, has just closed, as we see by the papers of that city. These entertainments were provided by the personal liberality of William Gray, Esq., Treasurer of the mills, who gave the sum of $500, to defray the expense, and they have been most successfully carried on by Gen. H. K. Oliver, the resident agent, aided by a committee of his overseers. The course was as follows:

1. Grand Concert, by Gilmore's celebrated Salem Band, (the same that made so great a sensation at Washington, at the Inauguration.) 2. Lecture on the "Gases," by Mr. Chamberlain, of Boston. 3. Lecture on "Electro Magnetism," by Mr. Chamberlain, of Boston. 4. Exhibition of "Panorama of Voyage to Europe." 5. Concert by the "Mozart Troupe," of Boston. 6. Lecture on "Solar System," by Gen. H. K. Oliver. 7. Poem "Money King," by J. G. Saxe. 8. Concert, by sixteen resident vocalists, under Newton Fitz. 9. Lecture on the "Mormons," by Hon. J. Quincy, Jr. 10. Concert by a Choir of 50 operatives from the Mills, under Mr. A. H. Palmer. 11. Lecture on "Comets and Fixed Stars," by Gen. H. K. Oliver. 12. Concert, by the "50 operatives," under Gen. H. K. Oliver. 13. Closing Entertainment, consisting of a Lecture on "Good and Ill Manners," by Gen. H. K. Oliver; a Poem, "Our Mill," by Mr. J. J. Doland, (an overseer in the Mill,) interspersed with music

from an instrumental band, and a choir of eight vocalists, both consisting of operatives, the latter under Mr. J. M. Richards, an overseer.

We have never heard before of anything like this in any of the mills of the country, excepting at the Pacific Mills, of the same city, which, we believe, first set the example. Here, however, the expense is defrayed by a small weekly assessment gathered from the operatives. This mill has a fine hall, which will accomodate 800 persons, and the entertainments of both companies have been held there; the "Atlantics" giving the "Pacifics" a complimentary concert, by operatives, in return for the use of the hall.

The relation which capital holds to labor, or more strictly, the relation between capitalists and laborers is such as to give peculiar facilities for exciting a powerful influence upon them, whether for good or evil. We have personally seen this influence exerted in both directions, in different places, and have also been sad, sometimes, in perceiving to what degree some of us daily exercise power over the permanent condition of others, moral, intellectual, and physical. It is a frightful responsibility, viewed in some of its aspects, and yet, when those responsibilities are properly met, it is delightful to think how much good we can sometimes do, how many hearts we can make happy, and how many tears, which otherwise might flow in deep, scalding streams, we may wipe away, while we set into motion, not a rolling *stone*, heartless and thoughtless, and soulless, but a current of life, happy and prosperous, accumulating as it advances, planting smiles and substantial joy round many a hearth-stone. Such has ever been the course of the gentlemen connected with the Atlantic Mills. Thousands will bless Gen. Oliver in their hearts every time they see him, and they will teach their children to remember with gratitude one who did so much for their real and substantial good. It was he, whom we once described in these pages, as saying to us, "friend P., if you will invent some new and innocent amusement, suitable for our operatives, I will give you five hundred dollars." We are happy to know that the officers of the corporation—Mr. Gray and others—fully sympathize in these movements.

Perhaps some will call us enthusiastic, when we write on this subject. It is not so. Others are blind, and dumb, and selfish—aye, sensual. Enthusiasm consists in attaching undue and exaggerated importance, relatively or abstractly, to some favorite idea. It would be difficult to exaggerate on the point to which we have here invited the attention of our readers.

To give some little idea of the closing lecture and poem, above referred to, we extract the following from the account given in a Lawrence paper.

"After a prelude by the band, and a glee from the choir, entitled 'Sweet the Hour when freed from Labor,' Gen. Oliver delivered an address on 'Good and Ill Manners,' replete with sound instruction, and at times exciting the risibility of the audience, by apt illustrations, in his usual happy and felicitous manner. He is of opinion that Americans are a little deficient in the 'good,' owing in a great degree, to their enlarged notions of *independence*. He plainly depicted the difference between the two, to the evident satisfaction of his hearers, as a matter of course; for his well known urbanity and kindness of manner to every one of whatever name or clime, eminently qualifies him to discourse on such a theme successfully.

"After which, Mr. Doland distinguished himself, and enchained the audience

for a full hour, by reciting a poem, which for versatility of thought, wit, humor, delineation, etc., would compare favorably with the effusions of those of greater pretensions, read before our popular lyceums. His pictures of well known characters in and around the mill, 'brought down the house' in tremendous storms of applause, as is equally true with other portions of the poem. We must content ourself now with a single quotation:

* * * * * * * * *

Look back ten years upon the past,
And where was Lawrence then?
Where were her streets and alleys cast,
And where her crowds of men?
No village stood upon its plain
To hide its barren fields—
But here the farmer drove his wain,
And fishers caught their eels.

Art had not choked the flowing stream,
Nor levelled down its banks—
The wildest brain had no such dream,
Nor thought of cotton hanks;
No lofty buildings marked the way,—
'Twas here no schools were had,
Excepting, as I've heard folks say,
Enormous schools of *shad.*
But soon came engineering knack,
With bands of Celts and picks,
And on our quiet Merrimack
They played some wondrous tricks.
They drove her from her ancient bed—
They built a solid wall,
And only helped to raise her head,
That she might have a *fall.*

They checked her course, increased her speed—
A paradox quite new—
And thought the more that she was *dam'd*
The better she would do.

They led her out upon the bank,
And with unchristian zeal,
They strained her on a monstrous rack,
And racked her on a wheel;
And as her water-power grew strong,
These mills adorned her skirts,
And stood the river's bank along
To make the nation's *shirts.*

At the close, resolutions were adopted, complimentary to Gen. Oliver, Wm. Gray, Esq., Treasurer, the orators, poets, and others, and all went home delighted and improved. P.

COAL OILS.

The Breckenridge Coal Company have offered to supply oil for our lighthouses, of equal excellence with the best sperm oil, and at a lower cost. We have no doubt that this can be done with a good paying profit. Chemical operations of this sort are yet in their infancy in this country, but a beginning is made, full of promise for the future.

The works of this company are at Cloverport, Ky. Twelve retorts are run night and day, consuming eight or ten tons of coal every twenty-four hours, and producing 750 gallons of crude oil. This crude oil produces about 600 gallons of refined oils. But these products are various. One hundred and twenty-five gallons are

BENZOLE,

Which is the material used for carbonizing humid air, by the American Gas Co. in the manufacture of illuminating gas, and is here worth about one dollar or $1 25 per gallon; but it can be afforded, ere long, we doubt not, at fifty cents; 75 gallons are naptha, 225 gallons are lubricating oil, and 175 gallons, oil for illuminating purposes.

ASPHALTUM

Is also a product of this process, which is worth $30 a ton, and is used for smearing the walls of vaults. Another product is,

PARAFFINE,

Which is valuable for making candles. This substance was recently discovered

in tar, by Reichenbach. It is squeezed out, and purified by repeated crystalizations in ether, which dissolves it when at a boiling heat, and deposits it, on cooling, in beautiful silvery scales. When these are melted and cooled, the mass has the appearance of pure white wax. It melts at 110° degrees. It burns, with a wick, with a beautiful clear white flame, quite equal to that of the finest wax. It consists of carbon and hydrogen. Thus all the products, except a small residuum, are articles of commerce. Nor is this all. For this process illustrates with great distinctness,

"THE HARMONY OF INTERESTS"

Among all classes of industry. The coal owner and coal digger furnish materials for the manufacture of oils, and they for the maker of candles, and for the portable gas companies; and they all help the farmer, furnishing light for his path, physical, and scientific and moral, eating his crops, etc., etc. So it goes. The world is round, and this is the type of what it contains. All its useful pursuits play in a circle with a common center—human progress to human happiness, present and permanent. One can not look where such results are not seen. Every subscriber to this monthly directly helps several trades. He excites to literary and scientific attainments on the part of the editors—sustains them in the pursuit of their business; he encourages the publishers to prosecute their work, while he feeds their families; he helps the printer who owns the establishment, to support it, and pay his workmen; helps support the families of the compositor who sets the type, the pressman who works the press, the paper maker, the type founder, the stereotyper, etc., and indirectly, the maker of printing presses, and a host of artizans, whose work is essential in preparing the means and facilities for carrying on the printing business. Who would not pay two or three dollars a year for the sake of such extensive good? Not a payment is made to us that does not within a few days help to feed and clothe, and make happy, *scores* of industrious laborers. What a glorious golden chain—what a wonderful net work is virtuous, educated society! P.

ARTIFICIAL LIGHTS.

ARTIFICIAL lights are not only among the necessities of civilized society, but the economy of their production and convenience in using them are points of practical importance belonging to every day's experience, in every household.

There are matters belonging to the general discussion of this subject of grave importance, on which we can not now enter. Among these are the proper position of a light in relation to the eye, and other kindred topics, which may command our attention hereafter. Our present inquiry is how to produce the light, what are the most economical of the different illuminating materials, and how shall they be used to the best advantage. Some lamps use one kind of material and some another. Sometimes the same material is burned with a single solid wick, at other, with a cylindrical wick, producing a hollow flame. Different devices are contrived for securing the same object in the use of the same fluid. Some forms of lamps are portable, others are stationary.

It is important to notice in the outset that it is not the combustion of the wick which produces the flame. The belief exists to some extent that it is the burn-

ing of the wick which produces the light, but probably most people understand that it is the combustion of the material of which the candle is made, or with which the lamp is filled, which produces the flame. It is equally true that whatever may be the substance employed, it must be changed into the condition of a gas before it can be consumed. The brilliancy of the flame is dependent, first, upon the quality of this gas, and, secondly, upon the conditions under which it is consumed. The gas must contain the elements that are required to produce a white heat, and the combustion must be perfect, and at the right moment. This latter point will be more clearly understood as we proceed.

One kind of flame is produced by the use of a solid wick, either singly or in pairs. As already suggested, the wicks act by their capillary attraction to raise the fluid so that it may come in contact with the flame.

A second kind of flame is that produced from a cylindrical wick—and this cylindrical hollow flame also occurs under distinct conditions.

1. *The astral or argand burner* produces a cylindrical flame, coming in contact, both on its exterior and interior surfaces, with a current of atmospheric air. Close the communication of the inside cylinder with the outer air, by stopping up the small apertures opening into the interior of the flame, or let any obstruction close that interior cylinder, and the flame is at once blackened by soot, and your table and its contents will soon be covered with smut and lamp-black, in other words, with unburnt charcoal. Such a flame as this may be called an *atmosphero-oil* flame.

2. *The solar lamp* is a slight variation from the astral. This variation consists in placing a ring of metal, of conical form, around the base of the wick, changing the direction of the current of air as it impinges upon the flame. The philosophy of this we will explain directly. Suffice it to say, now, that this single change doubles the quantity of light with the same expenditure of material. The solar light costs but half as much as the astral, the same material being used in both lamps. But a cheaper material may be used with a solar than was practicable with an astral lamp, because the astral is liable to be clogged by impurities collecting in the small conducting tube.

The solar lamp may be adapted to the combustion of lard. But for this, it is necessary to give a freer passage for the melted lard to the wick than oil requires, and the wick-tube must be insulated so as to prevent the diffusion of heat, and to confine it where it is most needed to liquify thoroughly the material to be consumed.

3. The *Bude Light* is a common argand lamp, with an interior current of pure oxygen, in the place of common air. It has hence been called an oxi-oil lamp. Its power is equal to two and a half best argand lamps.

4. The *Fresnel Light* is this same arrangement, the effect of which is increased by two or three or more concentric wicks, producing a dense mass of pure flame, and of course a very brilliant light.

5. The *Drummond Light* is produced by the combustion of pure oxygen and hydrogen gas, in the focus of a parabolic reflector. It was so called because it was used by Lieut. Drummond in his survey of Ireland. This is the brightest of all lights except that produced by galvanism.

6. The *Carcel Lamp* contains sundry clock-work contrivances for forcing the oil up into the wick, thereby producing a freer combustion and a bright flame.

But is not an economical light, compared with several of the other forms of lamps.

This short description of the different means applied to the production of flame, will enable us to judge more wisely in relation to nominal improvements in the method of lighting our dwellings. But we must pursue the same general train of discussion a little farther, before we pass an opinion upon any application of principles to the construction of lamps. Experiments very carefully conducted by eminent chemists prove that with the lamp and jets used in these investigations, a given amount of light is produced with the least consumption of material, if a single jet of flame is about five inches in length, or if an argand burner is used, if the flame is from three to four inches in length. The following table exhibits the results of these experiments with flames half an inch, one inch, two, three, four and five inches in length, with an argand burner.

Length of flame,	½	1	2	3	4	5
Quantity of light,	18.4	92.5	259.9	308.9	332.4	425.7
Material expended,	83.7	148.	203.3	241.4	265.7	318.1
Ratio of light to expenditure,	100.	282	560	582	582	604

The increase of the flame from one half inch to three or four inches, increased the quantity of light six times for the same expenditure of material. The reason of this is apparent from the following explanation, elucidating a point made in a former paragraph.

In our last number we stated that the brilliancy of a flame was dependent upon the presence of solid matter, in the form of minutely divided particles, as of carbon, or charcoal, which were raised to a white heat in the flame.

Now the material consumed, whether in the shape of oils or fats, etc., as with the gas delivered us through our gas pipes, is carburetted hydrogen. When we use tallow, oils, and the like, we manufacture the gas as it is consumed. When those materials come in contact with the lower extremity of the flame, they are pure gas, and contain no solid particles of carbon. But this exposure to heat decomposes this compound gas, setting free minute particles of pure carbon, and then, above the point where this decomposition takes place, the carbon being raised to a white heat, we have a brilliant flame. This explains why it is that the lower portion of the flame is blue, while the higher portions are so much more brilliant, and also explains why economy requires a given length of flame. In a short flame, this blue, undecomposed portion of it forms a considerable part of the entire flame, and hence the whole has but little illuminating power. It also explains why so trifling a difference as that which we have described between the solar and astral lamps, should so materially affect the character and intensity of the light.

When solar lamps were first introduced in this country, certain fixtures were sold, to be attached to the tube of astral lamps to convert them into solar lamps. We used them on an astral, and were astonished at the change produced. The light was far more brilliant, but the consumption of oil was also considerably increased.

The most economical arrangement of argand burners, in this same course of experiments, was shown to be as follows: The burners, that is, the cylindrical flame, should be six tenths of an inch in diameter, and should be formed by

holes one fiftieth of an inch in diameter, varying in number, not to exceed twenty, nor to be less than ten. For coal gas of an ordinary quality, the best arrangement was found to be not less than one eighth, nor more than one sixth of an inch apart. For purer gas, the distance may be slighty increased. When chimneys are used, they should be so constructed as to make the size of the flame the same at the top as at the bottom. If too tapering, the top will be smaller, and if the shape is otherwise out of proportion, the flame may be too large at the top.

Different arrangements, of course, are required for using different illuminating materials. Some require provisions for promoting ready combustion, others need cautionary arrangements, to secure against too rapid combustion. Lard and the burning fluids may represent these two classes. We purpose now, very briefly to point out the peculiar construction required for lamps of one kind or the other. We had designed to give a full list of those secured by patent, expired and unexpired, but a short investigation satisfied us that this would not only occupy more space than can be afforded for such a discussion, but would also be useless. We prefer, therefore, to deal with general principles, and to classify so far as we can. With this view, we commence with

LAMPS FOR LARD.

The difficulty to be overcome in the use of this material is comparatively the great amount of heat required to convert it into a liquid, by which it can be made available either in stationary or portable lamps. Various plans have been adopted for producing this result. One method resorted to is to enclose wires, terminated at the top in a button, within the flame, by which the heat is conducted to the lard below. But this has a tendency to cool the flame and render the combustion more or less imperfect. A dim and smoking light are the necessary consequence. Another method is, to elevate these wires above and out side the flame. But then they cast a shadow, and are liable to be covered with lamp black, and to annoy. They also mar the beauty of the lamp. Hence, ingenious men resorted to interior arrangements to meet this necessity. And then came before the public the piston lamp, the spring lamp, and the self-supplying lamp. All these proposed, by a change of arrangement within the interior of the lamp, to meet the necessity produced by the constantly diminishing quantity of material, and its increasing distance from the point of combustion. But the piston must be moved by the hand, and this is awkward, or at least inconvenient, and the spring requires personal attention to secure the regular elevation of the fat, as its surface recedes from the flame. Nor does the self-supplying always supply in proper quantities. One or two recent patents place the bowl of the lamp on a pivot, and the burner on one side, like a small tea-pot, the nose being the burner, so that the lamp may be tipped as the material is consumed. It is fixed in any given position by a screw. Another patent provides a small warm-air chamber, enclosing the wick and the lard cup. In1854, a patent was obtained for inclosing the wick within a perforated conical tube, within the burner.

The difficulty, however, remains. Lard may be used, but in some form or other this difficulty will develop itself. At least there is no plan yet devised by which lard can be used to the same advantage, and with the same convenience, as other more combustible materials. We doubt whether *the same*

amount of light may not be obtained, at the same price, by using a more costly material. It may be true that the cost of the light will be, in fact, less, by the use of lard, but the light will be less; and were more costly oils provided, one might not be satisfied with a light no better than lard furnishes, when a mere turn of a ring would materially improve it. Hence, those who do not wish to pay for a good light, and can not resist the temptation to *luxuriate* in this respect, may wisely (?) continue the use of lard.

There are, however, means of diminishing the inconveniences of filling, etc., worthy of attention from those who burn this material.

CAMPHENE LAMPS

Can not be used without well-contrived arrangements, not only for securing perfect combustion, but also for guarding against explosion. For though the liquid itself is not explosive, its gases, mixed with atmospheric air, are highly so, and in the hands of the careless or inexperienced, have done immense injury to persons and to property. The use of this fluid requires, first, a cylindrical wick, by which the largest possible amount of the surface of the flame is exposed to a current of air on both sides. It also requires a "button," the heat of which, directly communicating with the flame, tends to promote more perfect combustion; and third, the fluid must be used soon after it is prepared. After it has stood fifteen or eighteen days, it ferments, becomes gummy, and unfit for use. The cost of camphene is from 55 to 75 cents a gallon. But camphene is probably the cheapest kind of light, with the lamps in ordinary use, and this, with many, is a complete offset to the risk incurred. The lighting of a store for example, which, at ordinary rates for gas, would cost fifteen to twenty cents, with camphene would not cost more than six or eight cents. We are informed by a friend who has used both, that in his experience a cost of five cents per evening furnished as good a light from camphene, as seventeen cents worth of gas. There will remain, however, the exposure of the room and all its contents to a suit of black, whenever, by want of experience, or carelessness, or "accident," the camphene lamp is not in perfect order.

BURNING FLUIDS

Like common oils, may be used with a solid wick, though they require that wick to be arranged in a peculiar manner. They afford a good light, free from smell and from grease. Hence, they are convenient. But they should not be used without some kind of security against explosion. We have referred to Newell's safety lamp, and also to Prof. Horsford's, in former numbers; both are good. We have used the former for years, having previously tested it in various ways, trying its efficacy in every mode our ingenuity could contrive, but we could never get an explosion, although doing the same things with implements not thus provided, we have often obtained reports as loud as those of a pistol.

SAFETY LAMPS FOR BURNING FLUIDS.

Besides the inventions of Mr. Newell and Prof. Horsford, mentioned in our previous number, a contrivance by Mr. Landman brings down a button, when the lamp is upset, which extinguishes the flame. Another class of patents claims to secure against explosion by arrangements which prevent the fluid from rising above a certain height, thereby becoming so heated as to endanger an explosion. Another fills the bowl of the lamp with granulated pummice stone, which absorbes the fluid, but yields it as it is required for combustion.

This is supposed to prevent harm in case the lamp is broken. Another uses an elastic bag inside the bowl of the lamp, designed to provide for the accumulation of gas by the expansion of the bag, and also, if the lamp is broken, to keep the fluid safe within the elastic chamber.

ANDREWS' SELF-GENERATING GAS LAMP

Is another very ingenious arrangement, affording a safety and also self-generating gas lamp, without the use of an external wick. It is, in fact, a portable gas light, and burns with a flame resembling that of gas. Its construction is as follows: Within the bowl of the lamp is a cylinder of tin, sufficiently large to contain a metallic rod, on which is wound, lengthwise, a sufficient quantity of wicking to serve as a conductor of the fluid. This is inserted within the tube, and is held there by friction. The fluid being drawn up in this manner to the top of the wick, is exposed in a small chamber, being the upper part of the cylinder, which becomes filled with the gas of the burning fluid, an outlet for which is provided in small orifices, like those in gas burners, either one, two, three, or more, as may be preferred. These orifices are surrounded by a hoop or metallic rings, which are designed to heat the gas to a burning point, so that coming in contact with them, the gas will be inflamed. It is a safety lamp, because there is no opportunity for the formation of gas, beyond the contents of the small chamber we have described, and this is so far below the flame, and is so distinct from it, that it does not heat. Being rich in carbon, and the metallic rings or hoop securing a perfect combustion, the jet is clear and brilliant. The quantity of fluid consumed is just about equal to that required by an ordinary fluid wick, for a flame of the same size. But the light is essentially better, amounting, in our judgment, at least to one fifth, in favor of the gas lamp. We have tested it carefully and repeatedly by the depth of the shadow, and find the difference as we have stated. The flame is also steady, and therefore pleasant to the eyes. The only inconvenience we can discover is in lighting. It requires perhaps a quarter of a minute to heat the hoop by a match or a "lamp-lighter," so as to kindle the flame. With a cylindrical burner, (argand) it affords a very splendid light, and the jets may be arranged, of course, in any form that may be desired. Any ordinary lamp may be provided with these burners at a cost of one dollar each. We have seen no recent invention, in this department of science, which so commends itself to our judgment, and so pleases our taste, as this.

We shall be obliged to defer the illustration of the manufacture of gas for domestic uses till our next issue. P.

OXYDATE LAMP.—Mr. Nibbs, of Lancashire, has invented a lamp which is thus named, which is provided with a condensing apparatus, by which a large quantity of atmospheric air is collected, and is supplied to the flame so as to produce a perfect combustion, with a white and steady flame, free, of course, from all smoke and smell. It burns almost any kind of oil. It is also perfectly simple and durable. Five ounces of oil will burn six hours, giving a light equal to that of six candles. It is constructed in various patterns, from a cheap workman's lamp to the most elaborate patterns. A strong brass lamp that will burn ten hours can be had for a shilling (English.)

INDIANAPOLIS, INDIANA.

The growth of "The West" is more surprising to our older States, than the wonderful stories in Arabian fiction. It is actual, tangible, substantial, and promises still more in the future. Among the *details* of this progress, the following is worthy of note, which we condense from an exchange.

Indianapolis, the capital of Indiana, is an inland town, located on no navigable stream. But, being in a good location on the line of travel between the East and West, it has endeavored to turn its chances to the best account, and become a city of no little importance. It occupies a central position between the Ohio and the lakes, and between the Mississippi and Pittsburgh. It is on what was formerly called the National road between the East and the West. It is one hundred miles from any great city, and therefore, whatever is to be done to enhance its growth, must be different from that of the cities which have grown up from the increase of water commerce. The Board of Trade in Indianapolis has issued an address, setting forth the peculiar merits and advantages of the place as a depot of trade. From this document we learn that, in the year 1847, the population of the town was only four thousand. But in the fall of that year, the Madison and Indianapolis railroad was completed, and then commenced the era of improvement. At the present time, the inhabitants number full twenty thousand, and the town abounds in extensive manufacturing establishments. Of the completed railroads terminating there, the Board state the number at eight, making in all, fifteen hundred miles of track. A number of other roads are under contract, and will soon be completed. Seventeen different railways, including connections, comprising 2,800 miles of track, and having 12,000 miles of connections, directly center in Indianapolis, bringing all parts of Indiana, Illinois, Ohio, and Kentucky, within a few hours' travel of the city. Nearly one hundred different trains pass in and out of the city daily, and from three to five thousand persons visit the town in that time.

FOR THE PLOUGH, THE LOOM, AND THE ANVIL.

MECHANICAL PROBLEM.

Messrs. Editors:—I send you the following problem, about which many disputes have arisen, and probably many more will arise, before all are agreed upon the subject. Cannot some of your readers throw light upon it?

Suppose two boats in a stream at the same distance from the shore, with a man in each. One of the men has hold of a rope which is fastened to a post on shore. The other man has hold of another rope, and the end on shore is held by a third man. Suppose all three men to pull with equal force, which boat would get to shore first, and *how much* sooner would it get there. In the one case, *two* men are pulling against *each other*, in the other case, *one* man is pulling against a *post*.

This problem is susceptible of many different applications, but the principle is the same in all, and embodied in the above statement. W.

In answering the above inquiry, our correspondents will please confine themselves strictly to mathematical demonstrations, occupying thereby less space, and being far more satisfactory to the reader than opinions or suppositions.

P.

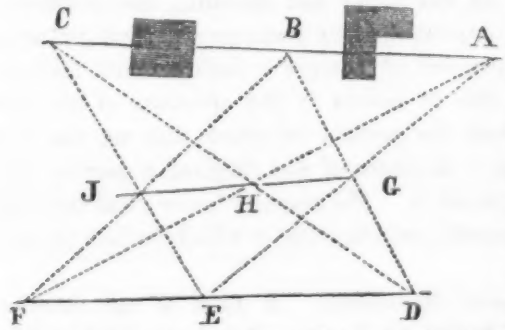
BALTIMORE AND OHIO RAILROAD, AND PHILADELPHIA, WILMINGTON, AND BALTIMORE RAILROAD.

In making our little sketch of the report of Mr. Felton last month, we made a mistake in writing the name of the road, calling it the Baltimore and Ohio, while it was the Philadelphia, Wilmington, and Baltimore Railroad. To us, this confusion of names is not strange, for in our mind, the two roads are always connected as one in interest, being parts of the great route South, and both also managed by exceedingly skillful and judicious officers. Still it is important, in the financial view of either road, not to make any such union of ideas, where there is none in organization. The Baltimore and Ohio road is one of the longest in the United States, having an extent of 379 miles, and with its two important branches, either of them longer than many entire roads, extending 523 miles, and through the entire distance, it is well manned and admirably managed, with skillful and courteous sub-officers, worthy the confidence of their superiors, and of the public. The capital of this road (the Baltimore and Ohio) is $31,000,000, and the aggregate revenue for the current year will probably exceed $5,500,000. Mr. Chauncey Brooks is President, and W. S. Woodside Master of Transportation. P.

USEFUL PROBLEM IN SURVEYING.

The following process is a very simple one, and the object secured by it is not provided for in our manuals and text books in common use. We find it in the *American Journal of Science.* It may be required sometimes to run a straight line through buildings or across other obstructions, when the several points in, or parts of the line, are not visible from each other, and are even inaccessible. Such conditions will give value to the following.

To find a third point C, in the line of A B, but invisible from them.



Set three stakes *D*, *E*, *F*, in a straight line. Then set a stake at *G*, in the line of *D B* and *E A*, a stake at *H* in the line of *F A*, and a stake *J*, in the line of *F B* and at the same time in the line of *G H*. Range out the lines *D H* and *E J* till they meet. This gives the point *C*, which is the point required. Any number of points may be obtained in this manner.

P.

Magnetism as a motive power was made a practical question as early as 1769, when one Rist D. Rustigen, of Holland, announced that he could make a ship without sails, go faster against wind and tide, than any sailing ship now goes with the wind and tide.

Ammonium.—Dr. Hoffman lately claimed before the British Royal Institution,

that he had obtained the metal ammonium. It was in the form of a bright glistening mass, somewhat resembling butter. If this is so, all the constituents of the atmosphere are metallic.

IMPROVED PHOTOGRAPHY—HALLOTYPES—PICTURES BY IMPRESSION.

It is but a few years since Daguerre first astonished the world by the effects which he produced upon a silver plate, by means of the solar ray. Nor has any art made more rapid progress since that day, than the beautiful art of photography, or light painting.

Perhaps our readers generally are aware that these effects were first produced by M. Daguerre, upon the metallic plate, by covering its surface with a thin coating of the bromide and iodide of silver, forming a surface peculiarly sensitive to the presence of light. A decomposition of this coating is effected by the sun's rays, more or less extensive according to the degree of exposure. By a subsequent contact with the vapor of mercury, the decomposed surface was covered with a coating of that metal, and the extent of this attachment between these minerals was in proportion to the degree of decomposition previously effected. The unaltered parts of the surface were then cleansed by a wash of hyposulphite of soda, in which the iodo-bromide of silver is soluble, and the picture was thus permanently fixed upon the plate. The portion from which the iodo-bromide is removed presents the original surface of pure silver.

These pictures could be viewed advantageously in one position only, and this constituted one of the principal objections to them. But the original discovery was perfect in its results, so far as an exact copy of every line and shade in the object presented to the sunbeam was concerned, and in this, of course, it far exceeds the skill of any living painter. The recent improvements in the art add to this, at least, *almost* everything required to fix upon the surface prepared for it, whether metallic or otherwise, all the living and spiritual, the *immaterial* elements, whatever they are, which are required to make up a perfect picture of the human face: exhibiting the expression of thought or feeling which, hitherto, the living painter has alone been able to secure to the creations of his skill. The *Hallotype* now stands forth from the surface on which this art has been exercised, as a distinct, living thing, a duplicate of the original, a perfect copy in feature and in truthfulness of expression. We scarcely know what one point could be specified in the more successful experiments, in which further progress is *especially* desirable.

But other forms of the art present themselves. A prize of ten thousand francs was lately offered by the Duke de Luynes, for "the best method of multiplying photographic pictures by impressions." A Danish newspaper informs us that Herr Grunth, the designer attached to the brigade of Danish Artillery, will most probably carry off the prize." It seems the Kriegsassessor* Grunth has occupied himself for several years with the art of drawing on paper with autographic ink, and then transferring the designs to stone, from which thousands of impressions can be taken. He has brought this art to such

* The word Kriegsassessor, or Krigsassessor as it is spelt in the Danish language, is an honorary title. Its literal translation is *War assessor*, or *military judge*.

perfection that, without the aid of any lithographer, he can rival the best lithographs in the clearness and sharpness of their lines and contour. Herr Grunth has succeeded in applying his autographic method to photography, so that he can, by a simple and inexpensive process, reproduce and multiply, *ad libitum*, the original photographic picture. The photographic paper is prepared in a peculiar way, the secret of which the author preserves to himself. He has given the name of "Chalkography" to his new method.

We hope the public may not be disappointed in the value of the results arrived at by this Danish savant. P.

Recent Inventions.

SELECTED AND PREPARED BY M. P. P.

Improvements in the Manufacture of Iron. By Joseph Gilbert Martien, of Newark, N. J.

This invention consists in applying certain materials to the liquid iron when subjected (according to a prior patent of the inventor) to the action of air or steam, for the purpose of purif ing or assisting in the purifying of the iron. These materials are applied to the iron in the liquid state in which it comes from the furnace, in such manner that they shall become blended with or disseminated through the metal, so as to act upon every part of it as far as practically may be.

When the iron to be purified contains sulphur, chlorine is used for purifying the iron from the sulphur, and the chlorine being in a gaseous state, it is blown into the iron, either alone, or mixed with air, through separate tuyeres as the air employed in the purifying process. The quantity of chlorine to be used must depend upon the quantity of sulphur in the iron, such a quantity being used as will combine with and carry off all the sulphur.

When the iron to be purified contains sulphur, and also some oxide of iron, hydrogen or carburetted hydrogen (coal gas) is used, in order to reduce the oxide to a metallic state, and to combine with and carry off the sulphur. This gas is applied in the same way as chlorine; but if the gas be mixed with air, great care must be taken not to mix the air and gas in such proportions as to form an explosive compound.

When iron contains, either at the commencement, or at any other part of the process, oxide of iron as well as sulphur, it may be convenient first to use chlorine for the purpose of carrying off the sulphur, and afterwards to use hydrogen or carburetted hydrogen for the purpose of reducing the oxide to a metallic state. In order to assist in purifying the iron from silica, and make it work more kindly, about three per cent. of oxide of manganese is added to the iron, as it flows from the blast furnace, or immediately after. This oxide is blown into the fluid metal by means of air, in the same way as the air used for purifying the metal is blown into it; or the powdered oxide may be blown in through the same tuyere as or together with that air. Oxide of zinc may also

be used in the same manner, in order to assist in decarbonizing the liquid metal.

There is a well-known natural mineral or metallic substance called spathose ore, containing carbonates of the oxides of iron and manganese, and some other elements. In order to decarbonize, or assist in decarbonizing the liquid iron to be purified, about five per cent. of the spathose ore is added to it in a powdered state, and it is blown through tuyeres into the liquid iron, in the same way as the oxide of manganese. To make the iron work more kindly, the patentee uses together with the oxide of manganese or spathose ore, or mixed with them or either of them, about two per cent. of powdered clay free from silica, adding it to the iron in the same way as the oxide of manganese and spathose ore.

When chlorine is not used in purifying the iron, chloride of sodium may also be used, mixed, or together with any of the materials above mentioned.

A patent has been secured for the process above described, in England, bearing date April 4, 1856.

IMPROVEMENT IN BLASTING ROCKS.—The mode now commended is to place the powder in a tube or case, between two heads provided with suitable packing, and attached to a rod. The charge can not "blow out," but its whole power is directed against the sides of the tube. This is done with more facility than is the old method, no tamping or packing being necessary to confine the powder in the holes.

RECENT FOREIGN INVENTIONS.

AMONG the lists of recent inventions we have examined, we select the following as worthy of note, and give an abstract of the descriptions accompanying them.

P.

NEW METHOD OF OBTAINING PURIFIED OIL FROM COAL, SHALE, AND OTHER BITUMINOUS SUBSTANCES, ALFRED VINCENT NEWTON, OF CHANCERY-LANE.—This invention relates to an improved method of distilling coal, shale, and bituminous substances, whereby a pure oil suitable for illumination and other purposes is obtainable at the first distillation.

It has long been known that many varieties of coal, shale, and bituminous substances were capable of affording oil and oily matters, when subjected to dry distillation at a low temperature; but in general the oil obtained at the first distillation comes over in a crude coarse condition, totally unfit for use. Several processes have been invented for purifying this crude oil, and some of them are attended with great success, but nearly all of them are expensive They involve the use of large quantities of sulphuric and other acids, salts, repeated distillations, heatings, boilings, agitations, decantations, and other labors. The bituminous substances before referred to, yield on distillation at a low temperature a gas, which, if passed through a worm or other suitable refrigerator, condenses into what is known as crude oil, requiring purification, as described.

The present invention consists in straining the gas which produces the oil, by passing it through a stratum or strata of sand, or other suitable medium, so that when condensed it forms a clear and valuable oil, ready for immediate use, This result is obtained by the following process, viz;—The coal, shale, or whatever bituminous substance is to be distilled, is broken up into very small pieces, and deposited upon the bottom of the retort. Upon the coal is thrown a quantity of common sand, about four times greater in weight than the weight of

coal. The sand should be made to cover the coal evenly, so that the gas in escaping from the coal will pass through the sand. A condensing tube leads from the upper part of the retort to the refrigerating worm. The retort, thus prepared, is submitted to a low fire, the heat of which is very gradually and carefully increased until the coal and sand having reached a temperature of about 212° Fahr., the moisture contained in the coal and sand begins to rise into the condensing tube in the form of steam, and on passing into the worm is condensed into water and escapes: the water, thus brought over, is loaded with black carbonaceous impurities. The same temperature being continued, the condensed water gradually becomes clearer, and the oil begins to form; both oil and water escaping together from the worm, the oil rising to the surface in the receiving vessel. The oil, as it thus exudes, is beautifully clear and pure, and when burned in an argand lamd with a deflecting button over the wick, gives a most brilliant light, totally free from smoke. As the distillation proceeds, the quantity of water that comes over lessens. The temperature before named should be steadily maintained until no more pure oil is produced. With some varieties of bituminous substances, however, the oil ceases to come over before it has all been exhausted from the material, although exposed to the above heat for a time, as described: in such cases a higher temperature is then required. Such additional heat should be applied very gradually, and with the utmost care. The distillation may proceed, adding degree of heat by degree, so long as the distilled substance yields pure oil. When the heat has passed a certain point, which is determined by the nature of the substance under distillation, no more pure oil can be had, and crude oily and tarry matter comes over. Owing to the great variety of bituminous substances existing, it is impossible to lay down the exact degree of heat required for the distillation of each by the process, but as a general rule the following method should be observed:—Commence with a low temperature and carry it up very gradually until the pure oil begins to condense; continue the same temperature so long as the oil exudes. If the oil ceases, increase the heat very gradually, as before described, until no more pure oil can be obtained. The gas out of which the oil is formed should be set free, and have an opportunity of passing slowly through the filtering or straining substances, so as to deposit its impurities. When too much heat is applied, the filtering or straining operation will be imperfectly accomplished. Instead of using sand as the straining or filtering medium for the gas, clay and earths of most kinds may be employed, as also chalk, gypsum, lime, black oxide of manganese, some salts, plumbago, charcoal, etc., and these may be used separately or in combination. When it is needed to refine the oil beyond the purity of the first distillation, the oil may be re-distilled in the herein-before described manner until the desired quality is obtained. The same process is applicable to the purification of nearly all kinds of oils.

The coke remaining after distillation will be found valuable as a fuel, and the filtering sands or earths, becoming charged as they do to some extent with ammoniacal products, may be employed with advantage for agricultural purposes. Some of these products when mixed with sulphur will harden on exposure to the atmosphere, and may be used for roofing, forming artificial stone, etc.

Improved self-acting Stand or Tilt for Casks or Barrels. Alexander Dalgpty.—This invention relates to a peculiar arrangement of self-acting apparatus for tilting beer or other casks or barrels requiring to be tilted. The apparatus consists of an upper holding or supporting frame, on which the cask or barrel rests on three bearing points (which principle of triangular bearing is maintained throughout); this frame works near the front end of the cask or barrel on a "V" or knife edge, so that perfect steadiness of motion is obtained, and no oil or other lubricating material is required for that or any other of the working parts. At the back end of the upper holding or supporting frame is fitted a tube, closed at the top and having a helical or other spring inside, which spring bears both on the upper end of the holding tube and on the end of a rod fixed by a pin-joiut at its lower extremity to the base of the stand: the

tube slides freely upon the rod, and has attached to its lower end a self-acting friction detent, which prevents the tube and upper holding or supporting frame from being forced downwards; but allows the spring to raise the upper holding or supporting frame as the contents of the cask or barrel diminish.

In order to tilt the cask,—the full cask or barrel being placed on the upper holding or supporting frame of the stand or tilt, and the friction detent held up,—the cask will descend at the back to a horizontal or nearly horizontal position; and as the beer or other fluid is drawn off, the decreasing weight will allow the spring to raise up or tilt the back end of the upper holding or supporting frame; whilst, at the same time, all vibration is avoided, and the cask or barrel prevented from being forced downwards by the self-acting friction detent, before referred to.

IMPROVED PROCESS AND APPARATUS FOR PREPARING, REFINING, AND FILTERING OILS OR FATTY MATTERS. JOHN DE COCK KENEFECK, OF CORK.—This invention relates, first, to a novel or improved method of preparing oils and fatty matters by means of chemical agents, which will remove any disagreeable smell therefrom. And, secondly, to the use of suitable apparatus for refining and filtering the oil.

In carrying out this invention the oils are first operated upon by sulphuric acid, of which from one to three per cent. must be added, according to the quality and state of the oils and fatty matters. The acid must be properly and intimately mixed with the oils in a suitable vessel, as described hereafter; after which the acid must be washed out, as far as possible, by water, to which may be added an alkili, such as lime. The oils or fatty matters are then to be run into a cylinder, provided with a piston so arranged as to create mechanical pressure on the oils or fatty matters without the employment of any extraneous motive power, such as steam or water power. By this means they are forced into a filter made of cast-iron, and containing an alkili, such as calcined marble or magnesia, through which the oils and fatty matters first pass, and where the vestige of acid is absorbed by the alkali. The oils or fatty matters are forced in the same vessel through a layer or mass of mealy substances obtained from oily seeds, and which mealy substances act chemically upon the alkali so as to absorb it; thereby freeing the oils and fatty matters from all impurities. The basis of the above-described process for purifying and filtering is, that the alkalies are made to re-act upon and neutralize the acid, and the mealy substances will extract or remove the alkali, together with all the impurities and acids.

IMPROVEMENT IN THE PREPARATION OR MANUFACTURE OF STARCH. WM. MAUGHAM, OF IFIELD TERRACE, STOCKWELL.—This improvement has for its object an improvement in the preparation or manufacture of starch, and consists in preparing starch which shall have the property of rendering the fabrics to which it may be applied, incapable of transmitting flame or fire. For this purpose, the starch having been manufactured, is saturated or mixed with phosphate of ammonia, and a small quantity of muriate of ammonia. The starch is afterwards dried or prepared, to render it suitable for the market.

After the water is decanted off at the end of the process usually practised for making starch, and before the starch is dried, the phosphate of ammonia is incorporated therewith, in the proportion of 480 grains to 1 oz. of the moist starch. The starch is then to be dried in the usual manner, when it will be fit for the market, and is to be mixed with water and applied to the fabric in the usual way. Or, after the starch has been made by any of the usual methods and has become dry, phosphate of ammonia is added, in the proportion of 600 grains of the salt to 1oz. of starch, and the ingredients are then ground together. The starch is now ready for use, and may be mixed with the usual quantity of water, and applied to linen or other fabrics in the ordinary way. It is, however, to be observed, that the fabrics should not be thoroughly dried and then sprinkled with water, after the manner generally adopted by laundresses, before ironing, but the fabrics should be partially dried, and then rolled tight in a

dry cloth, and allowed to remain some time before ironing; and to prevent the iron from sticking, a little clean tallow or white wax should be previously added to the starch when it is being mixed with the water. When starch is to be used for coarse fabrics for the purpose of rendering them fire-proof, muriate of ammonia may be employed with the phosphate of ammonia, and in that case the phosphate of ammonia is to be diminished in proportion to the quantity of muriate of ammonia added.

AN IMPROVEMENT IN COATING IRON WITH COPPER. By EDMUND RICHARD SOUTHBY, of Bulford, Wilts.

In coating iron with copper, according to this invention, the surfaces of the sheets or other forms of iron are first cleaned, as heretofore, then boiled or or heated when immersed in an alkaline solution, or a solution having an alkaline reaction on test paper, and then coated by depositing copper thereon, preferring it to be from a hot cyanide solution of copper.

The cleaning of the article desired to be coated with copper is effected by pickling or scouring; and then, if an acid pickle has been used, the article is dipped into a weak alkaline solution, and after being dried it is scoured with dry sand.

When thus prepared it is suspended by iron wires in a vessel containing an alkaline solution, that preferred being formed by dissolving two pounds of carbonate of soda in one gallon of water. This solution is heated to the boiling point, and maintained at that temperature for about an hour; at the end of which time it is removed, and immediately placed in the coating bath. The bath is prepared by dissolving ten ounces of cyanide of potassium in one gallon of water, and adding thereto as much freshly precipitated oxide of copper as it will take up. This bath is worked at a temperature of 180° F., with a copper pole, and with the precautions which are usual when depositing copper.

In place of preparing the article for receiving the coating of copper by means of a separate alkaline solution, the solution which is used in the coating bath being alkaline may be used for this purpose, the article being kept heated for some time in this bath before the deposition is commenced; and this process has advantages in coating large masses of iron.

When articles of wrought iron, cast iron, or steel, are coated with copper by the process described, the copper will adhere firmly to such articles, and will not scale off when the article is heated to a red heat.

Another patent for effecting the same thing has also been secured by Mr. Tytherleigh, of Birmingham, which consists in a process for coating iron in sheets or bars.

This invention consists of the method or methods of coating iron in sheets or bars, or before it is manufactured into articles, and also coating iron after it has been made into articles, with copper, or brass, or other alloy of copper.

The surface of the iron is first freed from scale, rust, or other adhering matter, by steeping it in dilute sulphuric or hydrochloric acid; or the iron is heated so as to form a scale thereon, which, when detached, leaves the surface of the iron clean. The patentee then fuses in a vessel or pan, copper, or brass, or other alloy of copper, and adds thereto borax or other flux. He then puts the cleaned iron or articles into the pan or crucible, and by shaking the pan, causes the iron or articles to be uniformly heated and coated with the copper or alloy. If the pieces of iron or articles to be coated are too large to permit of the shaking of the pan or crucible, then the iron articles are moved about in the fused metal contained in the pan by means of a pair of tongues or other implement. When the coated articles are removed from the pan, they are put into a sieve, if they are small, and shaken until the coating on them has solidified; or they may be placed on a plate of iron or other smooth surface, and stirred until they have cooled sufficiently to prevent them adhering to one another. When the pieces of iron or articles are large, they are placed separate to cool on any convenient support.

The Markets.

N. Y. WHOLESALE PRICES OF COUNTRY PRODUCE

FOR THE WEEK ENDING MARCH 25.

Reported by J. B. Conover, Commission Produce Dealer, Nos. 195, 197, and 199 West Washington Market.

Apples are still scarce and selling at high prices, and there are but few good ones coming down the river yet, and mixed lots of Greenings, Spitzenbergs, Roxbury Russets, etc., are being sold on the dock at $4 50*a*4 75 per bbl., and good, well-selected Baldwins, $5 50 per bbl.; Spitzenbergs, $5*a*5 50 per bbl.; Greenings, $5 per bbl.; Roxbury Russets, $4*a*4 50 per bbl.; Brown Russets, and other common Apples, $2 50 *a*3 per bbl.

Dried Fruit.—Southern Apples 8*a*9½c. per lb.; Northern, 10*a*11½c. per lb.; Peaches peeled, 14*a*15c. per lb; skin on, 8½*a*9c. per lb.

Cranberries, $11 50*a*14 per bbl.

Hickory Nuts.—State, $1 75 per bush.; Western, $1 per bush.

White Beans, $1 75*a*2 25 per bush.

Potatoes are getting scarcer, and prices are rather stiffer for first qualities of good Potatoes, and the demand is mostly for large smooth Potatoes of all kinds; there is also considerable demand for all kinds of Northern Potatoes for seed. Good Jersey Mercers are selling at $3*a*3 50 per bbl.; do. Carters $4*a*4 50 per bbl; do. Kidneys, $3 50*a*3 75 per bbl.; do. Black Mercers, $2 75*a*3 per bbl.; do. White Mercers, $2 75 per bbl.; Western Mercers, $3 50 per bbl.; do. Yellow Pinkeyes, $2 50 per bbl.; do. Blue Pinks, $3 50 per bbl.; Long Island Pinks, $3 25*a*3 50 per bbl.; Northern Mercers, $2 75 per bbl.; do. Junes $2 50 per bbl.; do. Peachblows, $2 75 per bbl; do. Dykman, $3 per bbl.; do Merinoes, $1 75 per bbl.; do. California's, $1 75 per bbl.; do.; Round Reds, $2 per bbl.; do. Carters, $3*a*3 50 per bbl. Sweet Potatoes from Delaware, $5 50*a*6 per bbl.

Vegetables.—Ruta Baga Turnips, 87½c.*a*$1 13 per bbl.; flat White do., 50c. per bbl. White Onions, $3 50*a*4 per bbl.; Red Onions, $3 per bbl.; Yellow, $3 25*a*3 50 per bbl.; Bunch Onions, $4 per hundred bunches. Garlic, $7 per hundred bunches. Beets, $2 25 per bbl. Carrots, washed, $1 50 per bbl. Parsnips, $1 75*a*2 per bbl. Pumpkins, $15*a*20 per hundred. Cabbage, $4*a*7 per hundred.

Poultry is rather plentier than last week, with but little variation in prices. Jersey and Philadelphia Capons are selling at 18*a*20c. per lb; do Turkeys, — per lb; do. Chickens, — per lb.; do. Ducks, — per lb.; do. Geese, — per lb.; Northern and Western Turkeys 12*a*13c. per lb; do. Chickens, 11*a*12c. per lb.; do. Geese, 7*a*8c. per lb.; do. Ducks, 14*a*16c. per lb.

Eggs.—State, 17½*a*18c per dozen; Western, 17*a*17½ per dozen. Eggs are rather scarce, and are quick of sale at the prices.

Wild Pigeons, $1 13*a*1 25 per dozen.

Butter.—Orange County pail, 28*a*31c. per lb.; good State, fresh, firkins, 25*a*28c. per lb.; good State, Dairy, firkins, 23*a*25c. per lb.; good State, fresh, Welsh tubs, 24 *a*25c. per lb.; good State, Dairy, Welsh tubs, 23*a*24c per lb.; ordinary State, 18*a*20 c. per lb.; good Western, 16*a*18c. per lb.; common Western, 12½*a*14c. per lb; Roll in barrels, 15*a*17c. per lb.

Lard, 14½*a*15c. per lb. Beef, by side, 6*a*9c. per lb.; Pork—Corn-fed, 10*a*10½c. per lb.; still-fed, 9½*a*9¾c. per lb. Mutton, 8*a*10c. per lb. Calves—Slaughtered, 9*a* 11c. per lb.; alive, 6½*a*7c. per lb. Cheese, 13*a*14c. per lb. Veal, 10*a*12c. per lb. Lamb, 8*a*9c. per lb.

N. Y. CATTLE MATTLE, March 25.

Whole number of Beeves received this week 1,019, 263 less than last week. Cows and Calves.—Supply larger than last week, and prices lower. Hard times for holders. Veals.—The ordinary supply: quality mostly inferior; the poor things must have had a short life, hardly long enough to become slippery. Sheep and Lambs—1,300 less than last week.

It is the custom in New-York to estimate beeves by the weight of the quarters only. The same, we believe, is true of the Philadelphia market. At Brighton and Cam-

bridge, near Boston, the estimation is made by the weight of the quarters added to that of the hide and tallow. This should be taken into account by those who compare the different market reports. Suppose, for illustration, that the quarters of a steer weigh 800lbs., and that his hide and tallow weigh 200. If a New-York butcher buys this animal for eighty dollars, he will tell you that he pays 10 cents the pound; if a Boston butcher pays the same for him, he will tell you that he gives 8 cents the pound. This makes the New-York reports read from one to three cents a pound higher than the Boston, when beef is really no higher in the former city than in the latter. Some of our readers may not have noticed this fact.

Beef Cattle, first quality, 10¼*a*11c¼c.; medium, 10*a*11; ordinary, 9¼*a*10; extra good held from 13 to 14. General average 10¼. Cows with Calves, $25*a*100 and upwards, but general rates $55*a*75; very mean, as low as $20. Veal Calves, first quality, 7*a*7½c. per lb., live weight; lower grades, 6*a*6¼c.; "Kiltens" (this means amazingly young calves) "as you could light of chaps," so much a head, cheap enough to allow the peddler something for the wear and tear of conscience. Sheep, $2 50*a* 6 according to size, quality, and worth of pelt. Swine, 7*a*8¼c. per lb, live weight.

PHILADELPHIA CATTLE MARKET, March 25.

The sales of Cattle yesterday and to-day were quite active, and the supply of all kinds of stock equal to former weeks.

Beef Cattle.—The entire sales of Beef Cattle reached 1,200 head, a large number of which were rather poor and scarcely fit for slaughter. This kind of stock fell from 80 cents to $1 on the 100 lb. in price, compared with good and prime stock, which was disposed of at from $10 50 to 11*a*11 50, and extra ones as high as $12 per 100 lbs.

Sheep.—This kind of stock is in active demand, and 4,500 head offered were soon sold at from $3 50*a*6 50 per head, and from 8*a*10c. per lb. net weight.

Hogs.—There was a limited supply of Hogs for the season, only 1,800 head being offered, all of which were sold at from $9 50*a*10 75 per 100 lbs. net, being a small advance on former prices.

Cows and Calves.—We have but little change to note at this market; 325 head were sold at from $20*a*60 each for cash.

CAMBRIDGE CATTLE MARKET, March 25.

Reported for the *N. Y. Tribune*, by George Rupp.

At market, 563 Cattle, about 450 Beeves and 113 Stores, consisting of working Oxen, Cows, and one, two, and three years old.

Prices: Market Beef, extra, $8 25*a*8 75; first quality, $8*a*8 25; second quality $7 25*a*7 50; third quality, $6*a*6 25; ordinary quality, $4 50*a*5. Stores: Working Oxen, from $80, 100, 125, to 185; Cows and Calves, from $35, 40, 50, to 65—quite a number at market; yearlings, none; two years old, $35 to 40; three years old, $42 to 48.

Sheep and Lambs.—At market, 1,279; prices in lots, $4, 4.50, 5 to 6.75 each; extra and selections, $7.50, 8, 10.

Swine.—520 at market; prices, live weight, 7*a*8c. per lb.; Dressed, 10*a*11c. per lb.

Shoats.—Wholesale, 8*a*9c. per lb.; Retail 9*a*10c. per lb.

The American Fertilizing Company.—A Company organized under the laws of New-York, and composed of practical farmers and business men, having after a careful investigation made arrangements to supply a cheap and valuable fertilizer, made according to a process lately patented by Charles Stearns, are prepared to receive orders. This valuable manure, they claim, is better than Peruvian guano, and can be sold at about half the price. We have conversed with the agent of the company, and find that he has excellent ideas on the composting and combining of fertilizing materials; but we know nothing of this manure. See advertisement.

TO OUR READERS.

HAVING some time since intimated a desire and an *intention*, so soon as our circumstances would warrant, to reduce our price to single subscribers, we are now able to announce the following as our terms, to take effect from January last:—To single subscribers, $2 00 a year; and to clubs of four and upwards, $1 50 each, payable invariably in advance.

The few who owe us on the year commencing with January last, shall have their bills adjusted accordingly; and those who have advanced on this year at a higher rate, shall have their time extended proportionally, that the change may operate alike favorably to all. To persons situated unfavorably for joining a club, and yet desirous of availing themselves of club prices, we will send them the current volume and the volume succeeding it, on the reception of $3 00.

And now will not our readers—such as have not yet done it, as we are happy to acknowledge that many have—interest themselves to exhibit our work and to form clubs for it on the above terms? As many as approve our efforts will feel a satisfaction in extending the influence and usefulness of this journal; and, as an additional inducement, we will send by return mail, post paid, the following:

For a club of four, "The Progressive Farmer," a 12mo, of 250 pages, especially adapted to young men; for a club of five, six, or seven, "The Farmer," a monthly, published at Amherst, Mass., in 1855, of about 200 pages quarto, neatly done up; and for a club of eight or upwards, a back volume of the *Plough. Loom, and Anvil*, handsomely bound.

And any one who will obtain for us thirty or more new subscribers, may retain one fourth of their subscription, in addition to the premium above offered, and the Journal shall be sent to each subscriber on the receipt of the other three fourths of the subscription at this office.

The name, Post office address, and time for commencing should be distinctly written.

THE CLEVELAND COMMERCIAL GAZETTE, Cleveland, Ohio, always ably conducted and of rare merit, has greatly increased its value of late, by a large increase in its size. It ought to be well patronized.

Book Notices, Etc.

MORALS FOR THE YOUNG; OR, GOOD PRINCIPLES, INSTILLING WISDOM. Illustrated with engravings and moral stories. By EMMA WILLARD. New-York: A. S. Barnes & Co. 1857. 217 pages, 16mo.

Mrs. Willard is well known as a most successful teacher, and an author of high reputation. In this little work she has done the public in general a good service in treating of "Wisdom" in the ordinary affairs of life, and in connection with our moral nature, Revelation and Christian Love, as illustrated by St. Paul in 13th of 1st Corinthians. It is a capital book

A PRACTICAL TREATISE ON GRAPES AND FORAGE PLANTS, comprising their natural history, comparative nutritious value, methods of cultivating, cutting and curing, and the management of grass lands. By CHAS. L. FLINT, Secretary of Massachsetts

Board of Agriculture, and Member of Boston Society of Nat. History. New-York: G. P. Putnam & Co. 1857. 236 pages, 8vo.

Mr. Flint is well known as a man of great industry and of good judgment, and he has turned these commendable qualities of character, in this volume, into a very useful direction, and has given us a book of great practical value, worthy of the attention of all intelligent farmers.

SCHOOL AMUSEMENTS; OR, HOW TO MAKE THE SCHOOL INTERESTING, embracing simple rules for military and gymnastic exercises, and hints upon the general management of the school-room; with engravings. By N. W. TAYLOR ROOT. New-York: A. S. Barnes & Co. 1857. 225 pages.

This book treats the subject it discusses wisely, and though the author might not introduce his entire system of physical exercises in all schools, perhaps every school may receive benefit from a careful examination of this little volume. It is handsomely printed, and its exercises, military and gymnastic, are perfectly intelligible through the numerous and well executed engravings.

List of Patents

ISSUED FROM THE U. S. PATENT OFFICE FROM JAN. 27 (THE TERMINATION OF THE PREVIOUS LIST) TO FEBRUARY 24.

[We change the arrangement of this list, from this date, giving the name of the thing patented before that of the patentee, as on the whole more convenient.]

Sewing Machine—Elias Alexander, New-York City.

Excavating and Dredging Machine—Jonathan R. Anderson, Chicago, Ill.

Coupling for Railroad Cars—Ed. H. Anderson, Milford, Del.

Filing Saws—A. M. Beardsley, Constantine, Mich.

Coupling for Wagons—Jacob Boyers, Grandville, Va.

Lard Lamp—J. S. Brown, Washington, D. C., assignor to Joseph Kent, Baltimore, Md.

Anvil—Otis Brigham and Seth E. Brigham, Fitchburg, Mass.

Cleaning Cotton—Francis A. Calvert, Lowell, Mass., and Chas. G. Sargent, Westford, Mass.

Window Blind—Alexander H. Cochran, New-York City.

Shaker Bar—Geo. W. Gardner, Troy, N. Y.

Sowing Grain and Fertilizers—J. C Gatson, Reading, Ohio.

Seed Drill—Oliver C. Green, Worcester, Ill.

Puddling Furnace—J. Green, Philadelphia, Pa.

Forging Gun Lock Springs—George P. Foster, Bristol, R. I.

Adjustable Seat for Carriages—Geo. and David Cook, New-Haven, Ct.

Cutting Veneers—P. Cook, Tonawanda, N. Y.

Harness Hames—Homer Compton, Wells' Corner, Penn.

Smith's Forge—John W. Crannel, Olivet, Mich.

Tenoning Spokes—John J. Croy, Caledonia, Mo.

Shirt Bosom Studs—John P. Derby, Cavendish, Vermont.

Cutting Tenons on Blind Slats—Seth C. Ellis, Albany, N. Y.

Tilting Buckets in Raising Water from Wells—Daniel P. Farnham, Milton, Wis.

Hydrant—Wm. Fields and Solomon Gerhard, Wilmington, Del.

Sowing Seed Broadcast—George Hall, Morgantown, Virginia.

Forming Felt Hat Bats—Washington G. Hagaman, Philadelphia, Pa.

Gas-generating Apparatus—James Hanson, of the Wandsworth Road, England. Patented in England March 21, 1852.

Dressing and Polishing Stone—David Hinman, Berea, Ohio.

Shingle Machine—Wm. Huey, Columbia, Pa.

Corn Planter—Sam. M. Perkins, Fort Hill, Ill.

Fan Blower—Chester P. Marshall, Worcester Co., Mass.

Boxes for Pise-work Walls—Otis & Wales, Needham, New-Haven, Ct.

Holding and Dispensing Syrups for Soda Fountains—James R. Nichols, Haverhill, Mass.

Cotton Seed Planter—James T. Orr, Orrville, Alabama.

Grinding File Blanks—Rob't G. Pine, Newark, N. J.

Cultivator—Norman W. Pomeroy, Meriden, Ct.

Sewing Machine—S. F. Pratt, Roxbury, Mass.

Life Preserver—Warren A. Simons, Boston, Mass.

Ladies' Riding Saddle—Robert Spencer, New-York City.

Joining Boxes, etc.—James Simpson, Balwinsville, Mass.

Seed Planter—L. Beemer, Libertyville, N. J.

Pump—Ambrose Tower, New-York City. Patented in England July 23, 1856.

Hanging Window Sashes—Wm. Webster, Morrisania, N. Y.

Cotton Gin—L. S. Chichester, New-York City, assignor to Henry C. Evans, of same place.

Shingle Machine—Wm. A. Whiting, St. Louis, Missouri.

Stump Extractor—Jason S. Wood, Washington Township, N. Y.

Brass Kettle Machine—Mary A. Cannon, Warren, R. I., administratrix of John Cannon, deceased, late of the same place; assignor to the New-York and Brooklyn Brass Company, of New-York City.

Sewing Machine—Joshua Gray, Boston, Mass., assignor to himself and John Gault, of same place.

Blast Furnace—Henry Wiessenborn, New-York City.

Brick Machine—Wm. Wood, Hartford, Ct.

Washing Machine—Amos Jacobs, deceased, late of Ithaca, N. Y.

Accelerating Fire-arms—Axel S. Lyman, New-York City, assignor to the Accelerating Fire-arms Company, of same place.

Joiners' Plane—J. F. Palmer, Auburn, N. Y., assignor to S. W. Palmer, Detroit, Mich.

Cut-off Valve of Steam Engines—Geo. H. Reynolds, of Medford, Mass., assignor to himself and D. B. Hinckley, Bangor, Me.

Pistol—Wm. S. Butler, Rocky Hill, Ct, assignor to Butler, Suydam & Co., of same place.

Bridge—Thos. W. H. Moseley, Covington, Ky.

Stuffing Leather—Joseph Armstrong, Woburn Center, Mass.

Melodeon—J. C. Briggs, Woodbury, Ct.

Fire-arm—Francis S. Brettell and Joseph B. Frisbie, Alleghany City, Pa.

Making Envelopes—Theo. Bergner, Philadelphia, Penn.

Attaching Thills to Sleighs—J. M. Batchelor, Foxcraft, Me.

Extension Hoppers for Separators, Grain Mills, etc.—John Bean, Hudson, Mich.

Printing Stamp—W. H. Elliott, Plattsburg, N. Y.

Shoes for Truss Frames—R. Comins, Troy, N. Y.

Gunpowder—Elisha B. Dodson, Reading, Pa.

Raking Attachment for Reapers—Peter Harnist, Marinetown, Ill.

Razor Strop—E. K. Godfrey, New-York City.

Attaching the Eyes to the Blades of Hoes—Henry Havil, Newark, N. J.

Seed Planter—Thomas B. Houghton, Bloomington, Ill.

Guide for Sewing Machine—A. Hull, Brooklyn, N. Y.

Ramming Percussion Caps—Chas. Hicks, Haverstraw, N. Y.

Method of Surfacing Felt Hats—Alvin Hurd, Danbury, Ct.

Feathering Paddle Wheels—Lewis T. Howard, Smith Mills, Miss.

Seed Planter—J. Hildebrand, East Berlin, Pa.

Gas-making Process—Jas. Hansor, Wandsworth Road, England.

Seed Planter—R. Boeklen, Jersey City, N. J.

Controlling the Throttle Valve of Marine Engines—Wm. H. Elliott, Plattsburg, N. Y.

Smelting Zinc-iron Ore—Joseph C. Kent, Cooper Iron Works, N. J.

Safety Indicator for Steam Boilers—Lucius J. Knowles, Warren, Mass.

Fence Adaptable to Uneven Ground—G. R. McIlroy, Covington, Ky.

Reaping and Mowing Machine—Jeremiah W. Mulley, Amsterdam, N. Y.

Ornamental Daguerreotype Cases, etc—John F. Mascher, Philadelphia, Pa.

Preparing India Rubber Cloth—Gulielmus B. Millerd, Cocheron, Ct.

Abdominal Supporter—Julia M. Milligan, New Albany, Ind.

Chain Pump—Edmund Morris, Burlington, N. J.

Gauge and Water Regulator for Steam Boilers—Mighill Nutting, Portland, Me.

Rail for Street Railroads—Samuel Nicholson, Boston, Mass.

Suspending and Adjusting Sticks in Sawing Machines—Ezekiel Page, Platea, Pa.

Ventilating Stove—L. M. Parsons, Waukau, Wis.

Hand Stamp—Perley A. Ramsay, Boston, Mass.

Corn Planter—Martin Robbins, Cincinnati, O.

Sewing Machine—Thos. J. W. Robertson, New-York City.

Seed Planter—S. G. Randall, Rockford, Ill.

Attaching the Arms of Horse Powers—Cyrus Roberts, Bellville, Ill.

Rotary Steam Engine—John B. Root, Buffalo, N. Y.

Metallic Roofing—Benj. Ross and John C. Campbell, Syracuse, N. Y.

Facing Mill Stones—Benj. D. Sanders, Holliday's Cove, Va.

Self-adjusting Wind Wheel—Edw'd A. Tuttle, Brooklyn, N. Y.

Seed Planter—H. Thomason, Lafayette, Ind.

Three Harvesting Machines—Walter A. Wood, Hoosick Falls, N. Y.

Indicating the Hight of Water in the Holds of Vessels—Wm. R. Warden, Boston, Mass.

Wool-cleaning Machine—William H. Watrous, Brooklyn, N. Y.

Locomotive Cow-Catcher—Joel Wisner, Aurora, N. Y.

Cutting Dovetails—E. G. Matthews, Clear Water, Min. Ter., (assignor to Harvey Church, Troy, N. Y.

Calendar Clock—E. P. Monroe, Albany, N. Y., assignor to Gilbert H. Scribner, New-York City.

Patching Bullets—Fred'k D. Newbury, Albany, N. Y., assignor to Rich'd V. DeWitt, Jr., of same place.

Resawing Lumber—S. P. Winne, Albany, N. Y.

Spring for Vehicles—D. Babcock, Homer, N. Y., assignor to Thos. Harrop and Darius Babcock.

Fishing Rod Reel—Edward Deacon, Brooklyn, N. Y., assignor to John Warrin, New-York city.

Making Seamless Tubes—Wm. S. Platt, Waterbury, Ct., assignor to W. S. Alfred and Clark M. Platt.

Metallic Brad—John R. Wendt, Boston, Mass., assignor to J. R. Went and Aug. Rogers, of same place.

Improved Window Blind—Daniel Kelley and Wm. Livingston, Grand Rapids, Mich.

Husking Corn—E. S. Holmes, Lockport, N. Y.

Hair Triggered Gun Lock—Jonathan Altman, Armstrong Co., Pa.

Extension Chairs—Saml. J. Anderson and Nelson Richardson, Erieville, N. Y.

Seed Planter—Jacob Landes, Selma, Ohio.

Seed Planter—Leonard Arnold, Janesville, Wis.

Photographic Camera Box—Luzerne M. Bolles and Washington G. Smith, Cooperstown, N. Y.

Making Hames—Henry Burt and James T. Hedden, Newark City, N. J.

Gas Regulators—John H. Cooper, Philadelphia, Pa.

Bosom Pins—John P. Derby, South Reading, Mass.

Carpenters' Bench Clamp—James E. A. Gibbs, Mill Point, Va.

Allowing Circular Saws to Play Laterally, Independently of their Shafts—A. P. Gross, St. Louis, Mo.

Chimney Cowl—Moses H. Hale and Saml. Horton, Newburyport, Mass.

Method of Generating Air Blast—Isaiah J. Hendryx, New-York city.

Excavating Rock—J. C. Osgood, Troy, N. Y.

Gas Retorts—M. J. Miller, St Louis, Mo.

Machine for Varnishing Percussion Caps—Chas. Hicks, Haverstraw, N. Y.

Folding Bedsteads—Benj. Hinckley, Troy, N. Y.

Gearing for Wagons—Edgar Huson, Ithaca, N. Y.

Brick Press—Samuel Lillie, Jr., Fort Wayne, Ind

Attaching Extra Top-sails to Vessels—E. H. Linnell, Orleans, Mass.

Fastening Skates—Henry Pickford, Boston, Mass.

Self-disengaging Car Coupling—J. C. Price, New Philadelphia, O.

Allowing Circular Saws end play independently of the Driving Shaft—Wm. S. Reeder, St. Louis, Mo.

Boat Oars—Rufus Rode, Manchester, Pa.

Spinning Flyers—J. N. Sawtell, Lowell, Mass.

Harvesting Grain and Grass—Wm. Schnebly and Thomas Schnebly, Hackensack, N. J.

Splitting Shoe Pegs—Nathaniel H. Shaw, Farnworth, N. H.

Fitting Gas Pipe—Caleb C. Walworth, Boston, Mass.

Harness for Horses—Joseph Smith, Delaware, O.

Securing Hubs on Axles—Alfred E. Smith, Bronxville, N. Y.

Feed Water Apparatus to Steam Boilers—Andrew J. Vandegrift, Delaware, O.

Damper Regulators for Steam Boilers—Wm. Webster, Morrisania, N. Y.

Electric Telegraphs—Wm. D. Wesson, Chillicothe, O.

Paring Apples—David H. Whitmore, Worcester, Mass.

Cutting Vegetables—H. A. Willard, Westminster, Vt.

Operating Valve for Steam Engines—Samuel R. Wilmot, Watertown, Ct.

Raising Water—Daniel K. Wider, Cincinnati, O.

Crimping Boots—J. G. Baker, Jr., assignor to himself and Chas. Bradfield, Philadelphia, Pa.

Sash Fastener—Thomas Floyd, assignor to himself and G. H. Merklein, Chambersburgh, Pa.

Tile Machine—Junius Foster, assignor to John Herbold, George Kuhn and Junius Foster, aforesaid, Brooklyn, N. Y.

Varnish Can—Alonzo Marshall, assignor to Benjamin Marsh, Newark, N. J.

Curtain Fixtures—Lewis B. Gusman, assignor to himself, Henry W., and Henry Safford, Philadelphia, Pa.

Securing the Panels of Field Fences—C. P. Garlick, Amadoa, Min. Ter., and G. M. Blackstone, Mainville, O.

Photographic Glass Holder—Joseph Longking, of the Township of New Windsor, N. Y.

Iron and Steel—J. G. Martien, Newark, N. J.

Calk for Horse Shoes—Edward Maynard, Williamsburgh, N. Y.

Iron Pavements—Chas. Meltam, New-York city.

Steam Boilers—J. J. Palmer, Flushing, N. Y.

Cordage Machines—James Pine, Hoosick Falls, N. Y.

Grain Separators and Straw Carriers—Cornelius Van Derzee, Albany, N. Y.

Saw Filer—Archibald Robbins, Alanson Shewman, and L. R. Bigelow, Watkins, N. Y.

Floating Sectional Dry Docks—John Seely, Buffalo, N. Y.

Ribs for Cotton Gins—John W. Webb, Cotton Valley, Ala.

Solar Camera—David A. Woodward, Baltimore.

Hanging the Sieves of Grain Separators—Benjamin Wright, Hudson, Mich.

Metallic Lathing—Wm. E. Worthen, New-York city.

Shoving Poles for Steamboats—D. Cumming, Jr., assignor to D. Cuming, Sen., Mobile, Ala.

Keeper for Right and Left-hand Door Locks—Calvin Adams, Oak Hill, N. Y.

Hand Seed Planters—J. H. Bruen, Penn Yan, N. Y.

Hinges—J. D. Browne, Cincinnati, O.

Cast-iron Kettles—C. C. Bradley, Syracuse N. Y.

Cauterizing Syringe—E. T. Bussell, Shelbyville, Ind.

File Cutting Machine—I. H. Coller, Poughkeepsie, N. Y.

Combining Hydrogen and Wood Gas—Warren C. Choate and C. N. Tyler, Washington, D. C.

Rotating Breech Fire-arms—Samuel Colt, Hartfort, Ct.

Elastic Cap for Sealing Cans, etc.—Mrs. Rhoda Davis, Brookhaven, N. Y.

Gig Mill for Napping Cloth—Ernest Gessner, Aue, Saxony.

Supplying Houses with Water—Thomas Hanson, New-York city.

Marking Slates—John W. Hoard, Providence, R. I.

Casting Skeins for Wagons—Andrew Leonard, Kenosha, Wis.

Saw Set—Joseph D. Spiller, Concord, N. H.

Operating Mandrel Cutters—Peter H. Niles, assignor to himself, Nehemiah Hunt, Ralph C. Webster, and Alfred Douglass, Jr, Boston, Mass.

Preparing Alkaline Silicates—John M. Ordway, assignor to the Roxbury Color Chemical Manufactory, Roxbury, Mass.

Friction Rollers in Ship's Blocks—John Allender, New-London, Ct.

Plates for Artificial Teeth—A. A. Bland, Baltimore, Md.

Shuttle Drivers—Saml. Boorn, Lowell, Mass.

Sewing Machines—C. D. Belcher, Charleston, S. C.

Pen and Pencil Holder—G. H. Byron, Governor's Island, N. Y.

Hand Stamp—Leonard Bailey, Winchester, Mass.

Sewing Machine—Joseph W. Burnham, Hartford, Ct.

Trip Hammers—Henry Bushnell, New-Haven, Ct.

Washing Machines—Rich. Collins, Chicopee, Mass.

Lubricating Fire-arms—Samuel Colt, Hartford, Ct.

Churns—E. P. Cowles and J. A. Cowles, Oakfield, N. Y.

Hand Printing Press—N. L. Chamberlin, West Roxbury, Mass.

Cutting Pasteboard for Boxes—E. E. Clarke, New-Haven, Ct.

Sheep Shears—E. G. Chambers, Bucyrus, O.

Harvesters—S. A. Clemens, Rockford, Ill.

Potato Diggers—Paul Dennis, Stillwater, N. Y

Suspending Wind Wheels—Joseph de Sendzimir, South Oyster Bay, N. Y.

Making Tire for Car Wheels—John Evans, Portsmouth, O.

Circular Sawing Mill—Philander Eggleston, Mobile, Ala.

Machines for Harvesting Corn—J. H. Frampton, Hopewell, O.

Chronometer Escapements—James Fulton, Louisville, Ky.

Bridge Trusses—Albert Fink, Parkersburgh, Va.

Harvesters—Lewis W. Harris, Waterville, N. Y.

Hand Stamp—Horace Holt, Winchester, Mass.

Screw Wrench—B. F. Joslyn, Worcester, Mass.

Weaver's Shuttles—Lucius J. Knowles, Warren, Mass.

Rakes for Reaping Machines—Caleb Lee, Knox Township, O.

Basin Cock—Robert Leitch, Baltimore, Md.

Corn Husker—Wm. Lewis, Seneca Falls, N. Y.

Photographic Plate Holder—Wm. and Wm. H. Lewis, New-York city.

Mastic Roofing Compounds—C. R. Milks, Detroit, Mich.

Husking Corn—John Massey, Buffalo, N. Y.

Curtain Rollers—Purches Miles, Hartford, Ct.

Shingle Machine—H. D. McGeorge, Morgantown, Va.

Composing Types—Wm. H. Mitchel, Brooklyn, N. Y.

Machines for Making Axes—Chas. Hutchins, East Douglass, Mass.

Grinding Card Cylinders—Jonathan Parker, Biddeford, Me.

Sewing Machines—S. F. Pratt, Roxbury, Mass.

Beveling and Jointing Staves—Erastus M. Pitman, Warren Co., Va.

Generating Steam—C. F. Pond, Hartford, Ct.

Centrifugal Friction Clutch—Rensselaer Reynolds, Stockport, N. Y.

Locks—J. Christian Reithmuller, Pittsburgh, Pa.

Soap Mixture—Isaac Roraback, Parish of Caddo, La

Washing Machines—Louis C. Rodier, Detroit, Mich.

Tin Pans—E. F. Parker and J. Smead, Proctorsville, Vt.

Projectiles—Malcom Shaw, Sandwich, Mass.

Mole Candle Machine—Benjamin D. Sanders, Holliday's Cove, Va.

Portable Fire-arms—John Tilton and William Floyd, Rock House, O.

Projectiles for Rifled Canon—John M. Sigourney, Watertown, N. Y.

Operating Supply and Discharge Valves of Hydraulic Engines—Homer H. Stuart, New-York city.

Cast Iron Pavements—Chas. J. Shepard, Brooklyn, N. Y.

Husking Corn—Hiram Strait, Covington, Ky.

Door Springs—Leopold Thomas, Allegheny City, Pa.

Melodeons—Thomas F. Thornton, Buffalo, N.Y.

Guide Wheels for Railroad cars—John B. Wickersham, New-York city.

Harvesters—David Watson, Newark, N. J.

Seed Planters—Firman Goodwin, Astoria, N. Y.

Hulling and Scouring Wheat—Joseph Weber, Braysville, Ind.

Valves for Steam Engines—Norman W. Wheeler, Cincinnati, O.

Plates for Fire Places and Grates—F. E. Pitts, Nashville, Tenn.

Agitating Liquors—Anson Wilson and A. Spencer Wolcott, East Bloomfield, N. Y.

Metallic Roof—Wm. E. Worthen, New-York city.

Reflectors for Locomotives and other Lamps—Isaac Carleton, Brooklyn, N. Y,

Mastic Roofing Materials—N. A. Dyar, Lynn, Mass.

Fluxes for Treating Alloys—Eli Mourier and Jules Francois Eeward Vallent, Paris, France, assignors to Henry Migeon, New-York city. Patented in France Dec. 30, 1854.

Seeding Machines—L. B. Myers and H. A. Myers, Massillon, O., assignors to themselves and Isaac Myers, same place.

Ships Steering Apparatus—J. B. Holmes, New York city, assignor to J. R. Pratt, same place.

Ships' Capstans—J. B Holmes, New-York city, assignor to J. R. Pratt, same place.

Swaging Iron—Junius Foster, Brooklyn, N. Y., assignor to John Herbold, George Kuhu and Junius Foster, same place.

Nautical Alarm—E. L. Seymour, New-York city, assignor to J. G. Wright, Chas. Wright, and H. I. Geyer, same place

Reducing and Smoothing Boards to Uniform Thickness—Tristram D. Knight, Charleston, Tenn.

Pointing and Threading Screws—D. M. Robertson, Manchester, N. H.

AGENTS FOR THIS JOURNAL

Recognized as such at this office, are as follows:

S. D. Allen, Paul A. Davis, in the Northern and Middle States; James Deering and Henry M. Lewis, in the Southern States. Require a certificate of agency from all others who present bills, the date of which is as recent as July, 1856.